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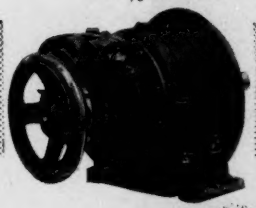

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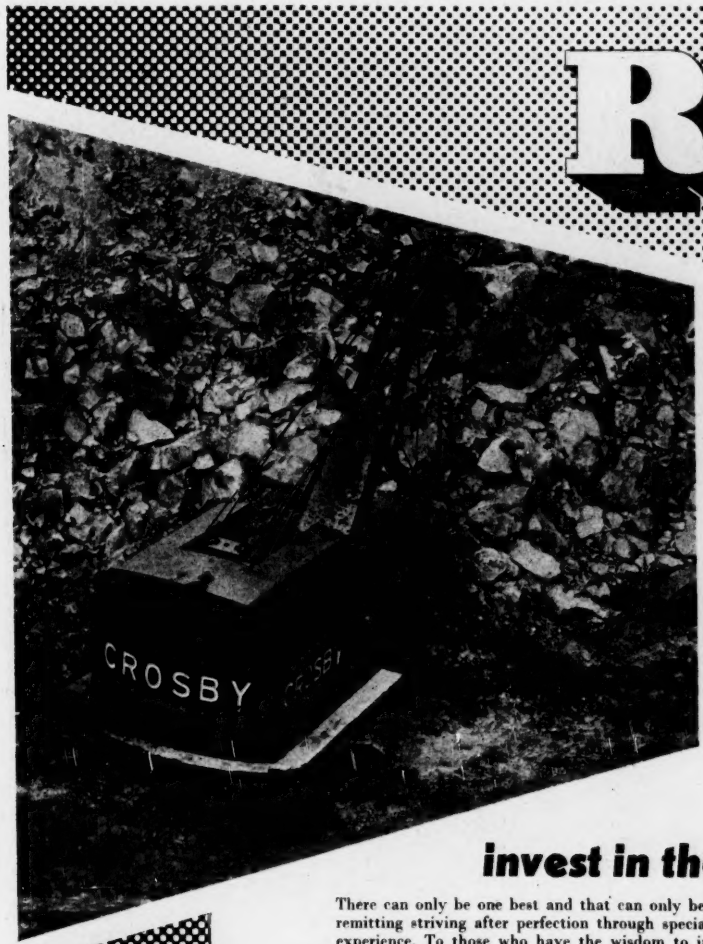

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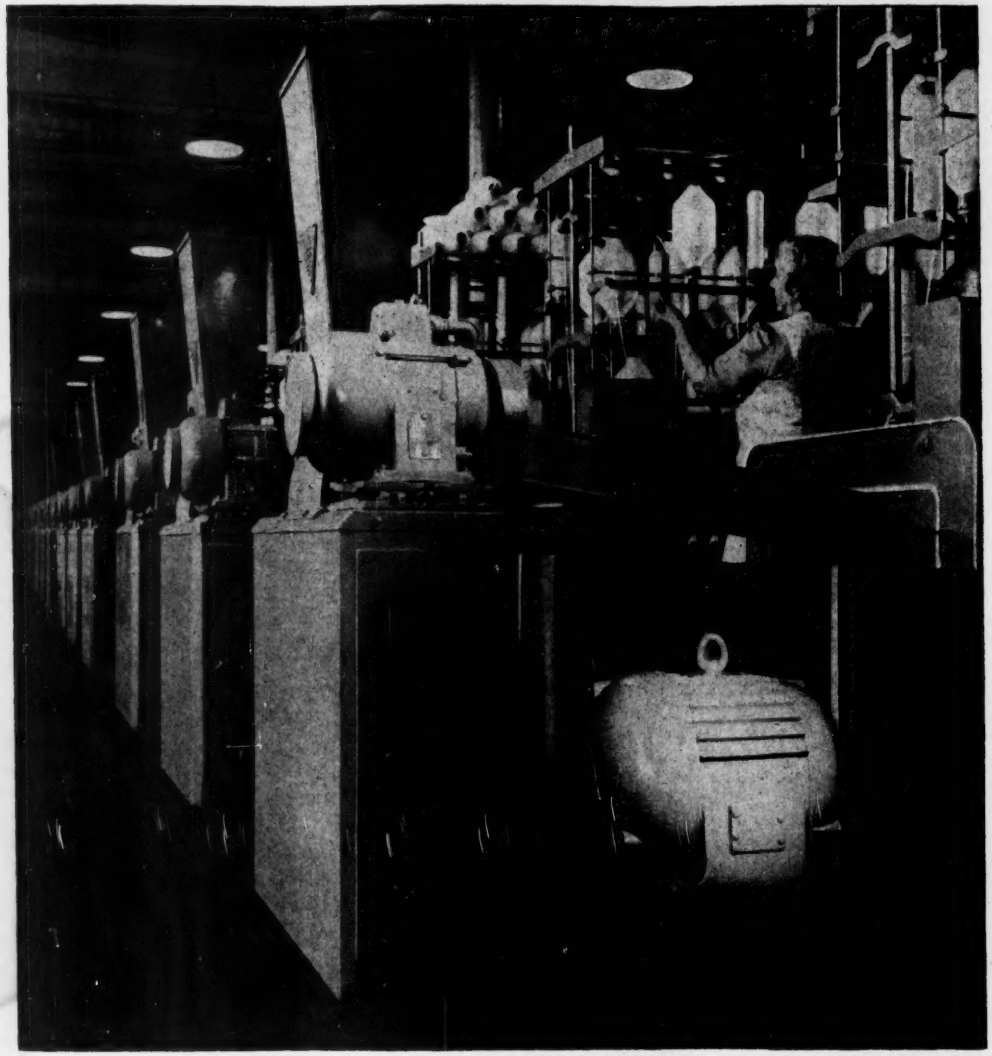

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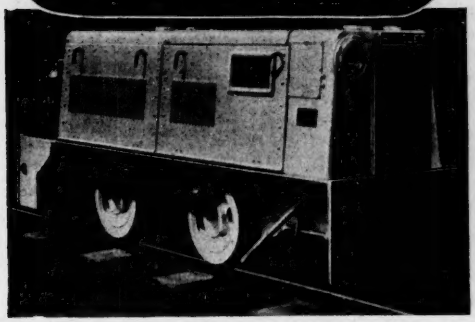

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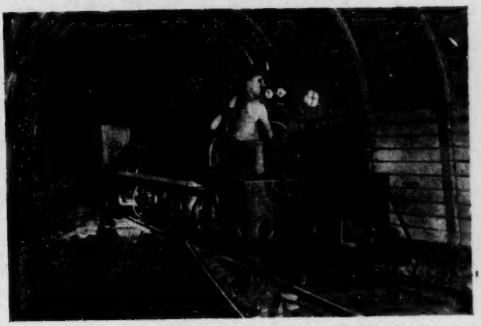

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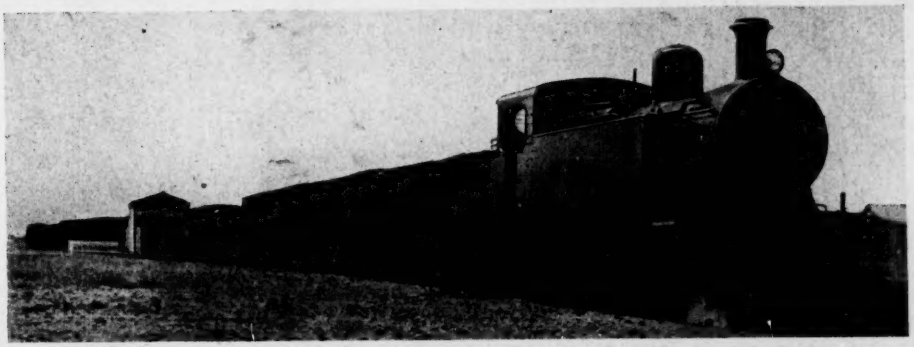
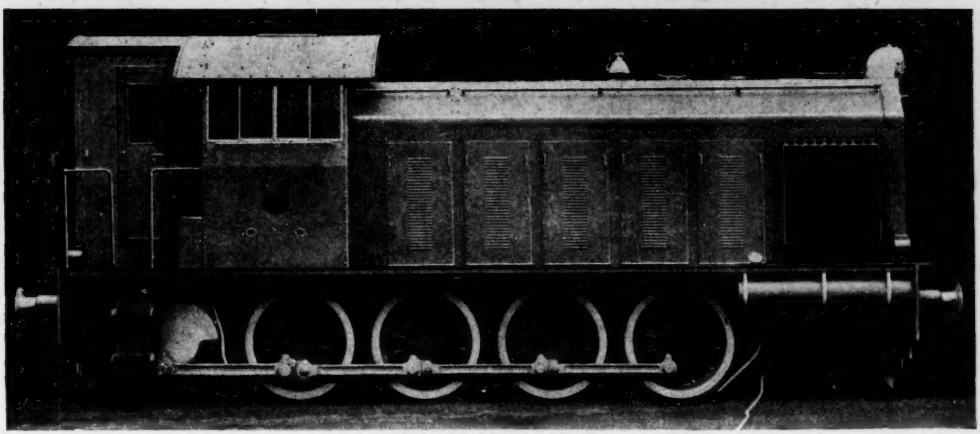


48-ton Hunslet eight-coupled steam locomotive on 650-ton train, Nchanga copper mines, Rhodesia



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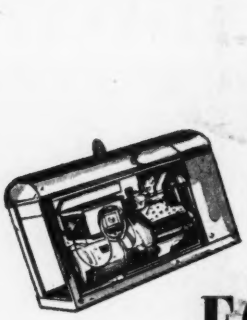
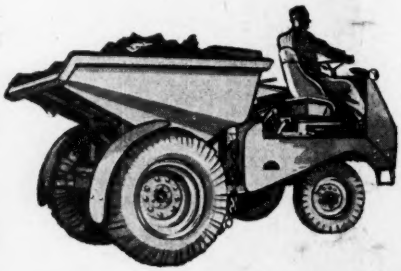
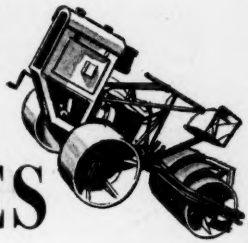

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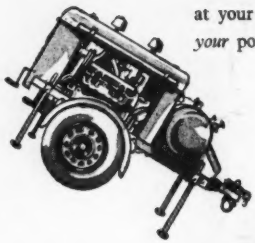
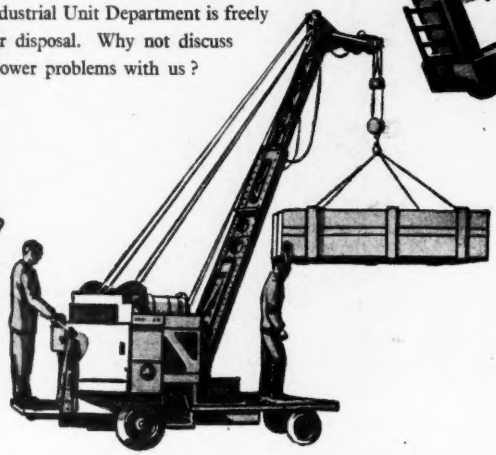

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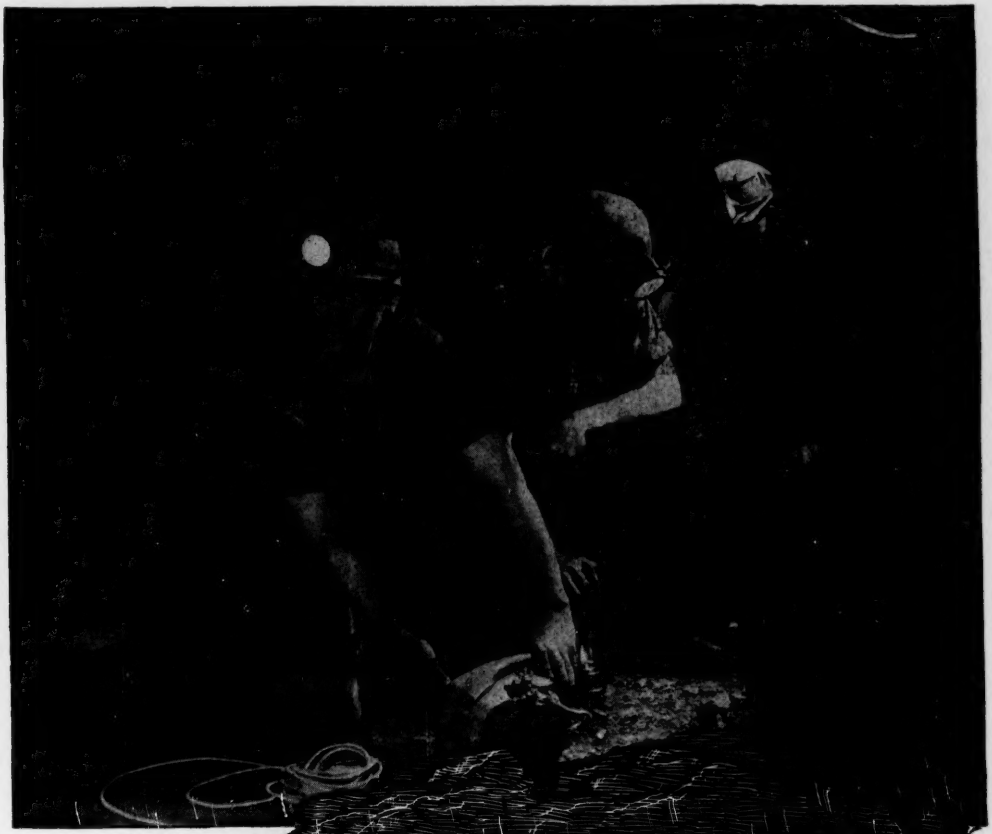

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The Mining Journal

Established 1835

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THIS WEEK'S FEATURES
TUNGSTEN CARBIDE TIPPED DRILL STEEL - - - - Page 310
THE NANTGARW COLLIERY COKE PREPARATION PLANT - - Page 312

NOTES AND COMMENTS

Commonwealth Supply Talks

The Commonwealth Conference which opened in the Cabinet offices on Monday to discuss the position of supplies of raw material and the securing of supplies of manufactures between the various members of the British Commonwealth, over which Mr. R. R. Stokes, Minister of Materials is presiding, seems a recognition of the trade difficulties under which all its members labour, rather than to promise their solution. We shall be better able to appreciate these matters if and when publicity is accorded to the proceedings. Another consideration which must make for uncertainty is the fact that we are now faced with a General Election during which the Government's business record, which has contributed to our present difficult position, will be presented to the electorate for judgment —the agenda of the meeting naturally reflects the Socialist view on many economic questions. Probably the main *leit motiv* of the proceedings centres round the idea of stabilizing prices by artificial regulations, and is thus an adjunct of the International Materials Conference now being held in Washington, though with what prospects of success cannot as yet be predicted. For the enormous price advances and fluctuations in many raw materials especially metals and minerals, two causes predominate: competitive stockpiling of metals, initiated and mainly operated by the United States, and the devaluation of sterling currencies suddenly introduced by the then Chancellor of the Exchequer, Sir Stafford Cripps. Till any further developments in these directions can be ruled out, it is difficult to see what practical outcome can be expected from the present Conference so far as price-fixing is concerned. However, the British Government is understood to be proponents of the view that to leave the problem of prices to solve itself, and to take no international action would be a great mistake.

The individual raw materials listed for particular consideration are almost wholly metallic; copper, lead, manganese, nickel, sulphur and pyrites, tin, tungsten and molybdenum, with the addition of rubber and wool, constitute the list. History and business experience alike would suggest that price limitation is the worst possible preparation for increasing output. Possibly the Government hopes that by sub-ordinating its economic policy as regards the mineral industry to the wishes of the United States they may obtain assistance, financial and material, which is urgently necessary for rearmament, and also possibly grants in aid for mineral development and supplies of plant and machinery which the Commonwealth countries desire.

We are, of course, unaware of the tenour of recent discussions on the highest levels at Washington, just as it is impossible for us to judge how far recent developments in control of materials and prices there reflect merely the designs of the present Democratic administration and would be obnoxious to a Republican administration, should Mr. Truman be defeated at the presidential election in the autumn of next year. They are certainly widely disliked in industrial and in mining circles at the present time. Any action which might follow from this Enquiry will hardly be immediate but its effects are likely to be felt over a lengthy period.

Premium Gold

The embarrassment of the International Monetary Fund regarding the maintenance of its price of the precious metal has been increasingly apparent for a considerable time, and following the recent meeting in Washington it is now reported to be preparing to leave it to members nations to regulate their premium gold market. Formal announcement is expected next week and should clarify the position. The South African director, Mr. Holloway, on his return home, is reported as saying that South Africa had established that the Fund has no authority whatsoever in regard to the marketing of gold for industrial purposes, nor any right to decide whether any particular demand for gold for industrial purposes was legitimate, and that it cannot suppress the trade in gold without breaking the articles of agreement under which it was constituted.

It now remains to be seen whether other producing countries, like Canada, Australia, Rhodesia, etc., who find their gold industry wilting under an unremunerative price will adopt Dr. Holloway's view, in which case a price restriction which has no relation to the great rise in production costs and to the advance of all other metal prices may be widely repudiated and a great stimulus given to the gold mining industry.

Developing Northern Norway

According to reports to hand from Oslo, the Norwegian government has submitted to Parliament a seven-year plan for the development of Northern Norway—so seriously devastated during the war by the retreating Germans—by the establishment or expansion of both extractive and manufacturing industries, including ore mining, metal industries, production of building materials, ship-building, manufacture of electrical equipment, and overseas shipping. Readers of this Journal will be specially interested to learn that work will proceed according to plan on the large iron-works at Mo i Rana and that it is also proposed to manufacture phosphorus. In a memorandum published this summer, the Norwegian authorities referred to the opening up of deposits of iron ore, copper, and pyrite in Northern Norway as well as to the utilization of water power. In fact, the Kirkenes iron ore mines—the largest in the country—are reported to be almost fully rehabilitated after the destruction wrought during the war. Next year's output in round figures is estimated at 500,000 tons and expectations are that this figure will be doubled later on.

For the financing of this ambitious plan, designed to find work for at least 10,000 people, it is intended to establish a fund of Kr.270,000,000, derived from the Budget surplus, with the object of assisting private investors. In addition, relief from taxation, and import preferences, may also be introduced. Development of electric power and transport, including the extension of the Nordland line will presumably be in the hands of the government.

Foreign capital is likely to participate in this seven-year plan. In fact, the Norwegian Minister of Trade, Hr. Brofoss, who is conferring this week in Washington with officials of the Marshall Plan administration, hopes that the E.C.A. will encourage private U.S. capital to invest in the project.

The outcome of these negotiations will not fail to attract attention in this country, especially in the City, on account of the old-established financial and commercial links between this country and Norway, and it is to be hoped that British manufacturers of capital equipment will eventually be called upon to co-operate in this far-reaching development plan.

Venezuelan Mining Production

The Venezuelan Ministry of Mines and Hydrocarbons reviewing developments in the six months at the end of last March, states that the 1950 gold output declined to 34,577 oz. owing to the handicaps experienced by Guayana Mines Ltd., the principal producer.

The output of diamonds rose to 60,389 carats. It is expected that the output will continue to rise as a result of the installation, by the Compañia Venezolana del Diamante, of mechanized equipment for the treatment of the diamond-bearing alluvials on its concessions in the Gran Sabana. Production should also be assisted through the measure taken by the Junta Militar by which an extensive area of diamond-bearing land is excluded from the reserved zone, and transferred to the free workings of Icabarú in the Gran Sabana, where there exists a numerous group of mines which, up to the present, has been the principal source of production.

Particulars are given at length of the iron ore deposits in the State of Bolivar over which the Orinoco Mining Co. (U.S. Steel Corporation) and the Iron Mines Co. of Venezuela (Bethlehem Steel Corporation) hold concessions. A commission was appointed to study alternative methods of shipping the ore, and recommended a mixed rail and sea scheme embracing 160 kilometres of track and the canalization of one of the mouths of the Orinoco to admit vessels drawing 26 ft. to a point near the mouth of the Caroni River.

Oil production for last year was 86,928,950 cubic metres —an average monthly output of 1,497,585. This year production has risen sharply and averaged 1,679,470 cubic metres for the first seven months.

U.S. Brassfounding Investigated

A representative team of the British brassfounding industry, lead by Mr. F. Hudson (Head of the Foundry Section, Development and Research Department, the Mond Nickel Company), which visited the United States under the auspices of the Anglo-American Council on Productivity, has just presented its report under the title "The Brassfoundry," copies of which may be obtained from the Council at 21, Tothill Street, London, S.W.1. (Price 7s. 6d.).

This report contains a wealth of information which should enable British brassfounders and manufacturers to try out U.S. production methods of interest to them. Moreover, meetings will be arranged in various parts of the country to stimulate discussion of this report and a sound film, "The Brass Trail," has been prepared, telling the story of the team's journey.

The report, which is based on the observations made in 21 plants visited—only a small cross-section of the industry—may be described as a variation on a well-known theme: for other productivity teams have returned from the U.S.A. stating that U.S. output per man per hour is higher than in Britain; that there is more mechanization; that both management and workers are more willing to try out new methods and techniques and last, but by no means least, that the incentive to earn is greater across the Atlantic.

The authors of the report conclude quite rightly that the provision of greater incentives is a primary requirement for promoting increased productivity in the U.K. brassfoundry industry, although these may not necessarily follow the U.S. pattern. They deduce that once a real incentive to earn has been created, the maximum use of mechanized aids incorporated in a layout of simple, but efficient design by even the smallest type of jobbing foundry, "will follow naturally," and they point out that without suitable incentives, there is a danger that the greater use of mechanical aids may lead not to increased productivity, but to more leisure and shorter working hours.

To this end, the report calls on the Government to "inspire anew the spirit of adventure in both management and worker," and exhorts industry to promote greater incentive to earn. Particular study should be given to a U.S. long-term profit-sharing scheme, described in the report. On the relationship between workers and management, the authors of the report state that the "U.S. plan of union contracts between individual companies and their workpeople suggests an approach," and they add, as a corollary, "in any case politics should have no part in industry." How true, but how remote from the British industrial scene of 1951.

As in the case of previous Productivity Team Reports, the conclusions arrived at are excellent and well formulated, but it is an open question whether they will be put into practice. Higher productivity by exhortation is a will o' the wisp—what is needed is a fundamental change of heart and of policy, for the decline of Britain's importance as a leading industrial country has already gone too far.

Canada

(From Our Own Correspondent)

Timmins, September 9

Aluminum Co. of Canada has flung the throttle wide open in the job of establishing the world's largest aluminium manufacturing plant at Kitimat in British Columbia. An expenditure of $200,000,000 has been earmarked for the initial construction job, with provision for a possible ultimate outlay of $500,000,000.

Among other things, some sections of the headwaters of the Fraser River are to be dammed back and diverted through a storage basin and tunnels so as to create a waterfall of 2,800 ft. The great hydro-electric plant established at the foot of this falls at Kemano is to be nestled in a giant chamber hewed into the Rocky Mountains for a distance of 1,000 ft.

Kitimat is to be the site for the aluminium plant, and 750 homes are to be erected for the accommodation of 6,000 people—and it is expected that the population will increase as the project progresses. The initial force will include approximately 1,200 smelter workers. The distance from the smelter city at Kitimat to the power plant at Kemano is about 45 miles.

USE OF HELICOPTERS

Across the valleys and mountain ledges the power transmission wires are to be strung by use of helicopters in what is expected to be a difficult and daring undertaking. In fact, the helicopter is playing a vital rôle in the transport of material and supplies for the construction crews who work along the intervening ledges—these helicopters being the freight and passenger elevators between the port at tidewater and the jagged peaks and mountain sides. The project may be classified as one of the most important in the industrial development of British Columbia.

NICKEL DEVELOPMENT BY SHERRIT-GORDON

Sherritt-Gordon Mines is to spend about $40,000,000 on placing Lynn Lake Nickel Mines in production in Northern Manitoba. About $20,000,000 will be involved in mine development, power plant, reduction works and railway construction. A further $20,000,000 will go towards the construction of smelting works in Alberta. The Canadian government, through the Canadian National Railways, is to build the $15,000,000 railway, involving a plan under which Sherritt-Gordon will pay extra freight of $350,000 a year for a period of 20 years, or at a rate of $2.66 per ton extra freight. At such time as 1,880,000 tons of freight have been transported over the line, the agreement calls for a rebate to the company, amounting to $2.65 per ton thereafter. The contract calls for the completion of the railway within two years from this date.

The United Steel Workers' Union has agreed to accept the offer of Hollinger Mines to pay a wage increase of 13 cents an hour—the approximate offer which was made before the strike began. The Union failed to get the check-off which it demanded, and the workers are back on the job following the seven-week strike.

At Kirkland Lake, the leading gold mines have given their employees a wage increase of five cents an hour plus incorporation of ten cents an hour cost of living bonus into regular wages. This may be the pattern to be adopted throughout the gold mining areas of Northern Ontario.

Giant Yellowknife Mines has demonstrated how gold mining may be conducted profitably in Canada's Northwest Territories. In the fiscal year ended May 31, the mine produced $4,195,144, with costs averaging $13.04 per ton. Also, ore reserves were increased to 2,400,000 tons. Whereas average for the past fiscal year was 410 tons of ore per day, the current programme calls for treating 700 tons daily by this time next year. The greater part of ore now in sight carries approximately $24.00 per ton in gold.

Important expansion of asbestos production in Canada may hinge upon a test soon to be made of ore from United Asbestos properties. The test is to involve 14,000 tons The sample is being accumulated at a rate of about 200 tons per day. This may be increased to 400 tons per day. When the full 14,000 tons become available, the entire sample will be put through the Asbestos Corporation's British Canadian mill (5,000 tons daily capacity). Unofficial reports suggest a plant of 1,000 tons daily may be considered on the United Asbestos properties when or if the results of the 14,000 ton test appear to warrant such construction.

India

(From Our Own Correspondent)

Colombo, September 5

The year 1951 promises to be a good one from the point of view of mineral production in India, according to figures released by the Director of Industrial Statistics, Simla. The production of coal is expected to be of the order of 34,500,000 tons in 1951, compared to 32,000,000 in 1950, an estimated increase of 8 per cent.

In iron and steel, both steel ingots and finished steel are expected to show an increase of about 49,000 tons and 53,000 tons. In 1950 their production was 1,438,000 tons and 1,004,000 tons respectively. The output of gold in India in 1951 is likely to go up by about 10 per cent. The expected production in 1951 should be of the order of 216,000 oz. In 1950 the production was 197,000 oz.

India's exports of mica, totalling Rs. 96,000,000 during 1950-51, showed a rise of almost 50 per cent over the previous year's exports. The increase is due partly to the electrification last year of the mica areas in Hasaribagh in Bihar. The bulk of the electric supply for these mica areas in Bihar was made available from one of the first transmission lines of the Damodar Valley Corporation. India exported 383,430 cwt. last year and 277,726 cwt. in 1949-50. The United States was the largest buyer of Indian mica and purchased almost two-thirds valued at Rs. 67,300,000. The United Kingdom was the next largest purchaser, importing Rs. 14,500,000 worth, while other buyers were France and Japan.

GOLD MINING IN BELLARA

Recently, the Rajpramukh of Mysore turned on the water and switched on electricity to the now Government-owned gold mines in Bellara, 90 miles from Bangalore. Gold occurs in the Bellara region in quartz veins which cut through massive basic igneous rock. Investigations conducted so far estimate the ore reserve at more than 100,000 tons of gold-bearing quartz, containing on an average about five dwt. per ton. An Advisory Committee has drawn up a ten-year development programme to do mining over a length of 2,000 ft. and to a depth of 400 ft. This is expected to yield 50,000 tons of gold quartz.

$1,000,000 FERRO-MANGANESE PROJECT

Negotiations have been completed between the Government of India and the Brainard International Co. of the United States of America for setting up a million-dollar plant in Madhya Pradesh (Central Provinces) which will have a capacity of 25,000 tons a year. While the company is prepared to invest the full amount of capital the Government of India have reserved to themselves the right to invest in 10 per cent of shares and also have reserved certain percentage for Indian investors. Details of the scheme are now being worked out.

Tungsten Carbide Tipped Drill Steel

By A. GRAHAM THOMSON

Lieut-Col. K. Rood, chairman of the Union Steel Corporation of South Africa, in his review of last year's operations, commented on the tendency during the year for a gradual swing from the use of detachable bits to tungsten carbide tipped jumpers in the South African mining industry.

The use of tungsten carbide bits has made very rapid headway since the war. Extensive experiments conducted under widely different conditions in many countries have given highly encouraging results. Bearing in mind the modifications in drilling practice necessitated by the introduction of this new material, as well as the design problems which manufacturers have had to solve, the future prospects for hard metal drills can be regarded as very favourable. From the data so far available, it seems evident that the higher cost of the tungsten carbide bits is likely to be fully justified by longer life and faster drilling speeds. The possibility cannot be excluded that ultimately all drilling will be carried out by tipped rods or tipped detachable bits.

Tungsten carbide tipped detachable bits were introduced to the Witwatersrand by the Germans during the 1930's, but the tips were too brittle and did not last. Further research into the physical properties of sintered tungsten carbide developed means of increasing the toughness, and this product was used with light drills. By the end of the war, the Germans had overcome their earlier difficulties in this field, and new alloys had been found which would stand up to the intense stresses set up in the cutting edge of the bit of a modern hammer rock-drill. In spite of the bombing of Krupps, the Essen "Widia" factory was still at work in January, 1946.

Before the war, little interest was taken in the German developments by countries other than the Axis powers, so that the use of this material for drilling is still a comparatively recent development in Commonwealth countries. Early experiments with tungsten carbide-tipped drill steel at Van Dyk Consolidated Mines were described in a paper by J. H. Bloemsma, R. Ramsay and O. Deane, which was delivered to the Chemical, Metallurgical and Mining Society of South Africa in January, 1947. At that period, tipped jumpers were still very expensive and their lives short in comparison with present-day results.

INVESTIGATORS FACED WITH UNPRECEDENTED CONDITIONS

When tungsten carbide was first demonstrated at the mine, it soon became apparent that the abrasiveness of the quartzites and conglomerate reefs of the Witwatersrand presented the investigators with conditions which they had never experienced before. Gauge loss, due to abrasion, reduced the effective drilling life of the tips to about one quarter of that which had been obtained in granites and similar rock types overseas. Nevertheless, the wearing qualities of the tungsten carbide tips were sufficient to arouse considerable interest in the possibilities of the material, despite the relatively low footages obtained. There were many disappointments in the experiments, chiefly caused by failure of the tungsten carbide tips at critical stages and by extraordinary variations in rock characteristics. Failure of the tips was frequently attributable to inexperience and lack of knowledge in grinding. Nevertheless, valuable information was gained both in regard to the potential advantages and the lines along which further research appeared to be required.

The progress achieved during the past four or five years is indicated by a recently delivered paper describing the use of tungsten carbide tipped stems in rock drilling at the S.A. Land & Exploration Co., Ltd. This paper was presented by M. W. Rushton and A. I. Beck to the Association of Mine Managers of the Transvaal on April 20, 1951.

The authors of the paper emphasized that increased production at this mine could not be credited solely to the use of tungsten carbide tipped drills, but they considered that without the aid of tungsten carbide, production and general efficiencies could not have been increased to the extent that was achieved.

EXPERIMENTAL WORK

The company supplying the stems started the assembly of imported tungsten carbide inserts into local stems in June, 1948, the complete manufacture of tungsten carbide inserts and assembly with the stems being begun in November, 1949. Since that time, the product has been used in the mine and a great deal of experimental work has been—and is still being—carried out. Parallel to the initial work undertaken at S.A. Lands, experimental work was being continuously carried out in a special test chamber at East Daggafontein. The results from both users were correlated, and since each stem was individually identified, close observation was possible.

As a result of the initial experimental work it was soon realized that rock drilling conditions on the Witwatersrand Goldfields were vastly different from those encountered in Europe. Extensive studies showed that the cutting angles had to be fairly constant for drilling on the Witwatersrand reef and quartzites, ranging from 164° for 35 ft. drilled to 153° for 140 ft. to the final footage. Experience having shown that the old conception of shaping was incorrect, the radius has now been changed in the manufacturing stage to a combination of a 3 in. radius superimposed on a 5 in. radius. This gives the centre knife-edge effect with the extremities flattened, being the shape the tungsten carbide insert tends to adopt under normal conditions after completing only one or two holes.

It became apparent that by resharpening at 100-105°, the amount of tungsten carbide lost due to grinding was approximately twice as much as that lost in drilling, while the steel supporting the sides of the insert was considerably reduced and weakened. It was therefore decided to alter this angle to 115°. Tests also indicated that in abrasive rock the parallel sided insert had an advantage over the tapered insert, the original gauge being maintained for a longer period. In non-abrasive rock, however, particularly rock of igneous origin, the added sludge clearance offered by the tapered gauge angle proved more advantageous. Experimental work in connection with variations to the tungsten carbide grade for different drilling conditions is in progress. Much work has also been done on the shape of the head. The tungsten carbide tipped stems at present in use have the water outlet placed on the side of the stem head below the insert. Under these conditions clearance of blocked stems presents quite a problem, and experiments are therefore being carried out with the object of splitting the tungsten carbide insert, thereby allowing the water hole to pass straight through the head. As a result of much experimental work a definite technique of grinding and wheel dressing is being worked out.

The second part of the experimental programme is of a more highly technical and specialized nature, much of this work being concerned principally with design, brazing technique, etc.

As an indication of the progress achieved, the authors state that the average life of a tungsten carbide tipped stem under normal mining conditions in the mine is 186 ft. drilled, compared with 164 ft. drilled in December, 1949, during the change-over, when supervision was naturally extremely close. It is felt that even better results can be expected in consequence of the experimental work. Among the attractive prospects of the new drilling medium are listed more holes per machine shift, thus less machines required to a given stope tonnage, saving in mechanical equipment, labour, etc., less capital expenditure, and lower running and maintenance costs throughout the life of the mine. A satisfactory feature was the almost complete absence of prejudice shown by miners and machine boys to tungsten carbide drilling.

Another recent paper deals with the use of tungsten carbide tipped detachable drilling bits in the Kolar Goldfield. These bits were introduced experimentally at Champion Reefs in February, 1947. The tremendous advantages to be gained from their use were quickly appreciated, but it was not till the beginning of 1949 that the supply position eased sufficiently to permit their introduction on a wider scale. The results achieved at Champion Reef Mine were described by E. de St. Q. Isaacson in a paper delivered to the Kolar Gold Field Mining and Metallurgical Society in December, 1950. During the first nine months of 1950, tungsten carbide bits were responsible for drilling some 150,000 ft. at this mine. The average monthly consumption of bits is now in the neighbourhood of 225, while the number being re-ground daily amounts to 120.

The bits are manufactured by Holman Bros. Ltd. They are fitted with tungsten carbide inserts to the drilling "wings" and are used in conjunction with a tapered stem which engages into a corresponding taper in the skirt of the bit. A copper thimble fits between the taper of the stem and that of the bit, and this ensures a satisfactory union. The original tests were with a single chisel type of bit, but these were subsequently superseded by the more conventional four winged type fitted with side vent-ho'es. Current experiments with a chisel type tungsten tipped rod, as opposed to a detachable bit, are also yielding surprisingly good results.

Mr. Isaacson describes the performances achieved by the tungsten carbide bits as remarkably encouraging. The introduction of these bits has enabled the company to use faster and lighter machines, which, previously, would have had little effect on their rock. An additional advantage is that a large portion of the shift no longer has to be spent in laboriously rigging a heavy bar, an operation particularly difficult at Champion Reefs owing to the tendency of the rock to arch as a result of the great pressures prevailing. Before the introduction of the tungsten carbide bits, increased costs due to the nature of the rock in the west limb stopes were some 100 per cent above mine average. They have now been reduced to only 47 per cent above mine average, representing a saving of about 30 per cent achieved by the introduction of the new technique.

RAPID PROGRESS MADE

Experience on the Rand suggested that as much as 50 per cent of the potential life of a bit might be lost owing to unsuitable feed pressure, such as might result from machines which are hand-held or operated by a screw feed. The development of an air-leg for use with tungsten carbide bits represents another important step forward in the technique of breaking ground. In general, rapid progress has been made during the past four or five years in overcoming the initial problems and developing rock drills designed to take maximum advantage of the unique properties of hard metal steels.

Tungsten carbide percussive bits are not necessarily economical in every case. There are certain rock formations in which it may be cheaper to drill with conventional detachable bits. Carbide bits are costly and will usually have to drill perhaps 100 times the depth of the conventional bit before they become economical. In many drilling propositions, however, they are an automatic choice. Before the introduction of tungsten carbide as a commercial proposition for rock drilling, no steel or alloys submitted for tests were found capable of increasing rock drilling efficiency in the hard and abrasive qualities of ground mined in the Kolar Field. Another factor was that there was not enough air pressure to hit the rock really hard.

ADVANTAGES OF CARBIDE DETACHABLE BITS

Carbide detachable bits have all the advantages of a normal detachable bit over mine steels, in that they eliminate the necessity for a sharpening shop, save time and cost in transport of drills, and give faster drilling speeds with consequent increase in the depth drilled per man and per working shift. They have further advantages over the standard detachable bits, in that high abrasion resistance often enables deep holes to be drilled with a single bit. Moreover, a carbide bit retaining its cutting edge sharpness and gauge clearance will drill consistently at an even speed, instead of falling away repeatedly. Yet another advantage is that only one or two carbide bits have to be transported to cover a day's work against possibly several dozen conventional detachable bits.

Experience has shown that the ideal drilling machines for use with carbide bits are light machines, having a comparatively light blow with fast rotation. Changing over to this type of machine might involve writing off a large amount of capital investment, but this should be offset by the lower upkeep cost of these machines. Since each hole drilled can be completed in much less time, the cost of air for power, wear on the actual drilling machines and compressors, lubricants and spares, are similarly reduced.

The Britannia Mining & Smelting Co., Ltd. have replaced diamond drillings with percussion drills and tungsten carbide tips for most of their blast hole operations and have thereby reduced ore breaking costs. This development was discussed by P. W. Billwiller at the Annual Winter Meeting, Vancouver, B.C., October, 1949 (Canadian Institute of Mining & Metallurgy, *Transactions*, LIII, 1950, pp. 45-53). Two-inch Carset bits manufactured in Canada by the Canadian Ingersoll-Rand Co., are used with one-inch hexagonal Atlas Chippewa alloy steel in 3 ft. and 6 ft. lengths. The machines used are 3½ in. automatic leyners with lugged or anvil block chucks. For drilling holes below the horizon, lugged machines with special adapter rods made from 1¾ in. solid round Atlas steel are required. These rods are lugged at one end and a water hole is drilled for 6 in. at the other end. Over the rod is placed a water swivel which permits the water or air to be sent directly into the steel. Among the main advantages of tungsten carbide drilling over diamond drilling are mentioned decreased cost per foot, increased footage per shift, and the use of standard equipment and crews.

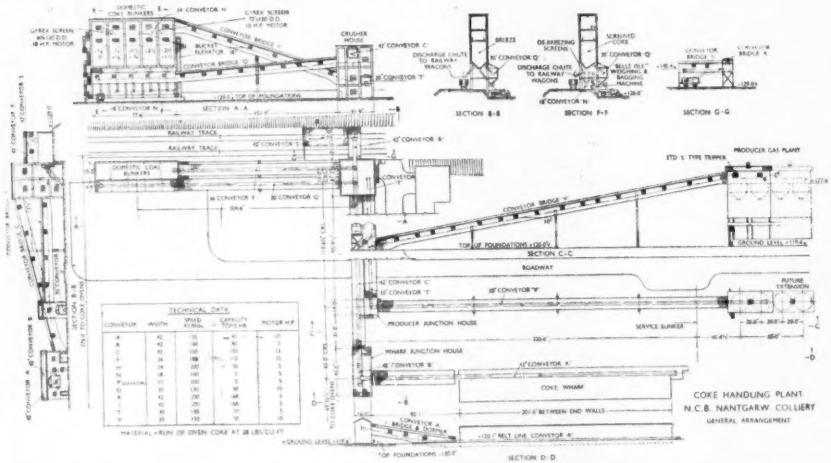
It is evident that the advantages of tungsten carbide tipped drill steel are becoming increasingly realized by mining engineers throughout the world. Familiarity with the requirements of this new technique will assuredly bring further important gains in efficiency, economy and speed.

The Nantgarw Colliery Coke Preparation Plant

The new coke oven plant at Glamorgan, which was erected at a cost of £3,000,000, will carbonize 1,300 tons of coal a day. After completion of all extensions, it will produce 1,100 tons of first grade coke daily. Mr. Noel-Baker revealed, at the opening ceremony, that the development of horizon mining had made possible the re-opening of Nantgarw coal mine, closed since 1927. *The Mining Journal* learns that output, while running at present at a nominal figure only will reach about 750,000 tons per annum when full production has been reached in 1957.

The system of handling and treatment of coke as received from the coke oven at the Nantgarw Colliery, South Wales, developed by the contractors, Fraser & Chalmers Engineering Works of the General Electric Co., Ltd., is described in the following article.

This system is claimed to be remarkable because of its extreme flexibility. Arrangement is made for the future provision of yard storage of oven coke and the ultimate treatment of the material so deposited, either with or independently of, the normal supply from the Coke Wharf. Special attention has been given to the general appearance of the plant to ensure its harmonizing with adjacent structures by building the screening and crusher house and the coke bins in reinforced concrete and covering the bridges and junction houses with asbestos sheeting. The layout and general arrangement of the plant is shown in Fig. 1.



General arrangement of the coke preparation plant at the Nantgarw Colliery of the National Coal Board, South Wales.

MECHANICAL HANDLING EQUIPMENT

The present rated capacity of the plant, as supplied from the Coke Wharf, is 80 tons an hour, but the conveyors and screening units are designed to cater for an additional feed from a future coke store of 50 tons per hour, giving a total of 130 tons an hour. The plant provides for rail wagon loading of furnace coke and de-breezed domestic coke, lorry loading, bagging and weighing of de-breezed coke, and both wagon and lorry loading of breeze. Provision is also made for the loading of domestic coke into wagons without de-breezing, conveying it to the storage bunkers of the producer gas plant, or storing it at a later date in the yard. Coke cutting facilities at 80 tons an hour are provided to augment the supply of domestic coke, if necessary, from the normal flow of furnace coke in the oven supply.

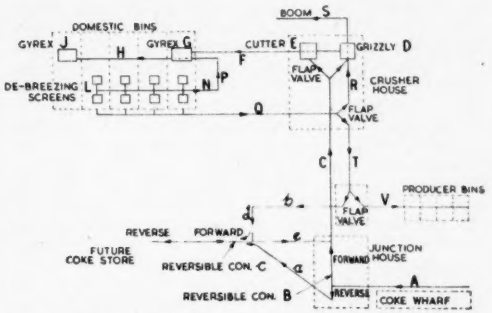
Under normal operating conditions, quenched coke from the ovens previously deposited on the 201 ft. long Coke Wharf, is allowed to run through regulating finger gates on to a 42 in. belt conveyor "A" which rises at its head end to deliver to a 42 in. conveyor "B," running at right angles and designed to deliver to the tail end of an inclined 42 in. belt conveyor "C," as will be seen overleaf, the flow diagram. Conveyor "B," is reversible in order that the wharf coke may eventually be delivered also in the opposite direction to the future yard storage conveyors.

Conveyor "C" elevates the coke to the Grizzly and Crusher House and delivers it to a 48 in. x 5 in. shaft rotary grizzly screen "D" designed for 2½ in. separation. Two screens are mounted side by side on a hand propelled travelling carriage with alternative locating feature so that either screen may be overhauled while the other is in operation.

The + 2½ in. oversize or furnace coke is discharged to the inclined 42 in. belt conveyor "R," which in turn delivers to a 42 in. hinged boom conveyor "S" at right angles and surmounting the wagon loading track. The boom is operated by a power driven winch, designed to lower and feed the coke into the wagons with the minimum of breakage.

The — 2½ in. undersize from the grizzly discharges to the tail end of the 36 in. belt conveyor "F" running parallel with the rail tracks and elevating the coke to the Domestic Screen House and storage bins. Flap valve gear is provided in the chute to the grizzly so that, if necessary, the wharf coke on conveyor "C" may be by-passed to a 21 D-Cort's coke cutter, the products of which would also be delivered to conveyor "F." Conveyor "F" delivers to a 72 in. x 120 in. double deck Gyrex screen "G", fitted with 1½ in. and 2½ in. mesh cloths discharging + 2½ in. and — 2½ in. to + 1½ in. coke to respective bin compartments and delivering the — 1½ in. coke to the tail end of inclined 24 in. belt conveyor "H."

This conveyor runs the length of the domestic bins and discharges to a 60 in. x 120 in. double deck Gyrex screen "J" fitted with $\frac{3}{8}$ in. and $\frac{3}{4}$ in. mesh cloths and discharging the — $1\frac{1}{2}$ in. to + $\frac{3}{4}$ in., — $\frac{3}{4}$ in. to + $\frac{3}{8}$ in. and — $\frac{3}{8}$ in. coke or breeze to the respective bin compartments.



Flow diagram of the mechanical handling equipment

The graded or screened domestic coke is withdrawn from the bin bottoms through cut-off and deflecting gates attached to the four respective bin compartments and delivered to two 36 in. x 54 in. single deck Gyrex debreezing screens fitted with $\frac{3}{8}$ in. mesh cloths located under each bunker mouth. One of each is arranged to discharge the screened coke to railway wagons through the medium of hinged chutes, while the other discharges to a chute fitted with deflector valve and so designed as to deliver either to a Belle Isle bagging and weighing machine or direct to lorries through the medium of hinged chutes. The breeze compartment is fitted with chute and gates to enable the material to be loaded into either rail wagons or lorries.

The — $\frac{3}{8}$ in. coke or breeze from the debreezing screen is collected by the 18 in. belt conveyor "N" and discharged into a 10 in. bucket and belt elevator "P," located at the end of the bins, which in turn elevates and discharges the breeze to the tail end of the above mentioned conveyor "H" for rescreening on the 60 in. x 120 in. Gyrex screen "J" with the — $1\frac{1}{2}$ in. feed which deposits the breeze into the appropriate bin compartment.

Provision is also made for withdrawing the contents of the domestic bins and delivering it, without debreezing, to the 30 in. belt conveyor "Q" returning to the Grizzly and Crusher House where the coke is discharged to a two-way chute fitted with a deflector valve whereby the material can be delivered either to conveyor "R" and thence to boom conveyor "S," for discharge to rail wagons, or to the tail end of the 30 in. belt conveyor "T," running back towards the Coke Wharf and terminating in the Producer Junction House.

The head of this conveyor is equipped with a two-way chute fitted with a deflector valve and designed to deliver domestic coke to the 30 in. belt conveyor "V" running parallel with the Coke Wharf and delivering the coke to the top of the Producer Gas Plant Building, or alternatively to the future yard storage.

Conveyor "V" discharges to the producer hoppers by means of a travelling tripper and provision is made for future extension to the producer gas plant.

The plant embodies roller bearing idlers incorporating triple seals, the return idlers being of the rubber disc type to guard against undue spillage or wear incidental to being in contact with the carrying side of the belts. The conveyor drives comprise direct coupled worm reduction gear units and flexible couplings, the coke cutter incorporates a fluid coupling and Texrope driving unit, the Gyrex screens are driven through Texropes. The transfer chutes are lined with hard cast iron, while the conical bottoms of the domestic bins are tile lined for protection against the abrasive nature of the material being handled.

ELECTRICAL EQUIPMENT

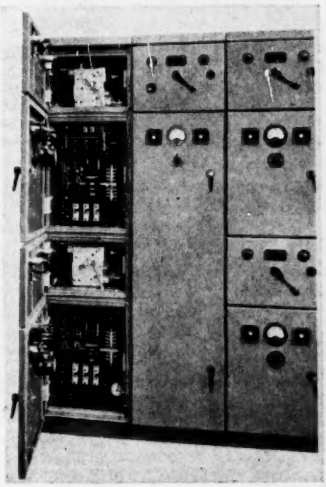
G.E.C. squirrel cage motors of the totally enclosed fan-cooled type have been standardized throughout the coke preparation plant, and in all, 26 motors ranging from 5 to 25 h.p. and totalling 240 h.p. have been supplied. The control gear for 18 of these motors is housed in a cubicle type switchboard, located in the switchroom in the Grizzly and Crusher House. The remaining eight machines which drive the debreezing screens, have independent direct-to-line starters which are mounted near the motors.

Maximum flexibility of operation and control is a feature of the plant, and electrical interlocking sequence starting is provided to enable the various functions of the plant shown in the flow diagram to be controlled from six separate remote control stations working in conjunction with interlock switches operated by the deflecting valves in the two-way conveyor feed chutes.

The starting sequences and interlocking features provided are as follows:

Coke Wharf to domestic bins and loading booms, with crushing (Sequence 1); future store to domestic bins and loading booms, without crushing (Sequence 2); Coke Wharf and future store to domestic bins and loading boom, without crushing (Sequence 3); Coke Wharf to domestic bins, with crushing (Sequence 4); and future store to domestic bins, with crushing (Sequence 5).

These sequences are operated from a control unit located at the grizzly and crusher floor. The required sequence is preselected by means of a switch and the corresponding flow of material, together with the position of the flap valve in the Grizzly crusher delivery chute, is shown by an indicator lamp and an illuminated descriptive panel on the control unit.

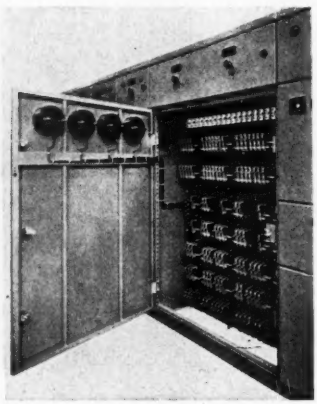


Interior of a typical section of the control board showing the arrangements of the contactor gear for controlling two motors

Coke Wharf to future store, controlled by a "start" and "stop" push button switch located at conveyor "B" floor (Sequence 6); domestic coke to loading boom, controlled by a "start" and "stop" push button switch at the grizzly and crushed floor level operating in conjunction with an

indicating lamp actuated by a flap valve interlock in the discharge chute of conveyor "Q" (Sequence 7); domestic coke to producing bins, controlled by a "start" and "stop" push button switch located at the producing bunker top level, operating in conjunction with an indicator lamp actuated by flap valve interlocks in the chutes on conveyors "Q" and "T" (Sequence 8); domestic coke to future store, controlled by a "start" and "stop" push button switch located at the grizzly and crusher floor level, operating in conjunction with an indicator lamp actuated by flap valve interlocks in the chutes on conveyors "Q" and "T" (Sequence 9); and breeze to domestic bins, operated by a "start" and "stop" push button switch located at the de-breezing screen floor level (Sequence 10).

The main switchboard is a self-supporting steel structure of duplex construction, with an overall length of 25 ft. It comprises a total of 26 panels, and an interior view of a typical section, consisting of two motor control panels with their associated triple pole isolators, is shown on page 313. Each panel is equipped with a triple-pole contactor fitted with sequence interlocking contacts, magnetic blowouts and magnetic overload releases with adjustable oil dashpots. Three fuses of the H.R.C. type, and where necessary,



Incoming feeder panel of the control board

sequence relays, are also mounted on the contactor panel, while indicator lamps, local control push buttons, a sequence cut-out switch and an ammeter are mounted on the door of the cubicle.

The six sequence timing relays for the sequence control of the whole switchboard are housed in one cubicle, and five spare panels have been provided to house the starting equipment for the future stockyard conveyors. An indicator view of the incoming feeder control panel is shown above.

For stopping the plant in an emergency, heavy duty emergency stop buttons are provided near each motor, and emergency stop buttons and pull-wire operated switches are disposed throughout the various conveyor runs. Klaxon alarm signals are also provided to give audible warning when any selected starting sequence is put into operation.

In addition to the electrical equipment for the Coke Preparation Plant described, the General Electric Co., Ltd. has also supplied the motors and control gear for the Simon-Carves by-products and boiler plants, the Plowright Brothers surface plant, and the Ashmore Benson Pease gas producer plant. For these a total of 157 motors, ranging from ¾ h.p. to 440 h.p., and totalling 3,400 h.p., have been supplied.

REVIEWS

Elements of Ore Dressing.—*By Arthur F. Taggart, 1951, New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd. Pp. xvii + 595. 5¾ x 9¼ in. Price 80s. net.*

The author, Professor of Mineral Engineering, School of Mines, Columbia University, who is well known for his famous classic *Handbook of Mineral Dressing*, approaches the subject matter of the present book from the standpoint of everyday experience, claiming that the majority of ore dressing processes are mechanizations of familiar natural phenomena seen and experienced all round us.

Throughout the book, the emphasis is on the analysis of machines and processes and the identification of their elements with established scientific laws rather than on structural and operating detail. Through the newly-adapted flow sheet form and method of flowsheet analysis which the new form facilitates, consideration of mills as process units is stressed. The view that a mill and all its parts comprise a single treatment process is a continuing theme.

Beginning with a chapter on What Ore Dressing Is and Does, the author explains in turn Hand Picking, Screening and Filtration, and Electrical Concentration. The title of Chapter V is Introduction to Sedimentation, to be followed by: Acceleration in Free-Settling; Introduction to Gravity Separation; Hindered Settling; Sink-Float; Jigging; Film and Through Concentrators, and Shaking Concentrators.

A discussion of organic Chemicals in Flotation is followed by five chapters devoted to flotation. There is a chapter on Miscellaneous Methods of Concentration and the concluding chapters deal in turn with Primary Crushing, Secondary Crushing; Grinding; Transport and Controls, and Flow Sheets. An appendix of over 70 pages is devoted to the ore dressing laboratory, laboratory instruction sheets and report writing.

Measures for the Economic Development of Under-developed Countries.—*Report by a group of experts appointed by the Secretary-General of the United Nations. Pp. ix + 108. Obtainable from H.M.S.O. Price 5s.*

This report is divided into three parts. Part I contains the terms of reference and analysis of unemployment and under-employment in under-developed countries. Part II deals with measures requiring domestic action, covering, *e.g.*, the pre-conditions of economic development, economic organization and technology. Part III relates to measures requiring international action. Here, the authors discuss problems concerning the terms of trade of under-developed countries and the external capital requirements for rapid economic development.

The authors make sixteen major recommendations; eight of these deal with national measures to be taken by the governments of the under-developed countries themselves. Other recommendations are addressed to the economically more developed countries. Finally, a set of recommendations is addressed to the United Nations and other international agencies.

Electrodeposited Tin-Nickel Alloy Coatings.—*By N. Parkinson, S. C. Britton, and R. M. Angles. Pp. 12. Issued, free of charge, by the Tin Research Institute, Greenford, Middlesex.*

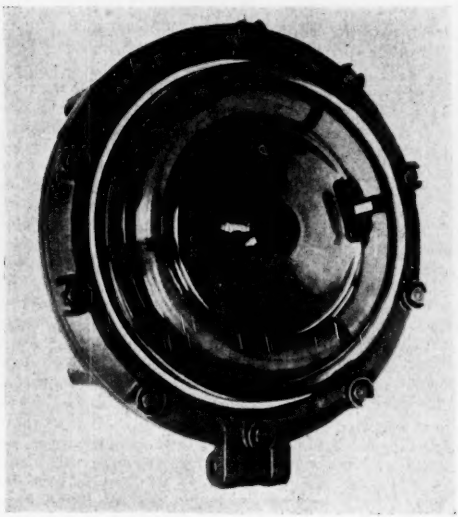
This account summarizes papers presented to the Electrodepositors' Technical Society on the electro-deposition and the corrosion resistance of the newly invented tin-nickel alloy. The subject is doubly interesting in view of the increasingly severe restrictions currently being imposed on the use of nickel, and the excellent corrosion and tarnish resistance of this new alloy coating, which is at least comparable with the present traditional chromium on nickel.

Machinery & Equipment

The Dunelm Fluorescent Mine Lighting Fitting

A new method of mine lighting has recently been developed by Clarke, Chapman & Co. Ltd., Gateshead 8, in collaboration with the School of Mining, King's College, University of Durham, the main feature of which is the use of a circular fluorescent tube. The idea of using fluorescent lighting for mines is not, of course, a new one, but the introduction of the circular tube has, according to the manufacturers, made it possible to produce a compact, lightweight, flameproof unit of 15 in. diameter, 7 in. thickness, weighing only 28 lb. The circular shape is stated to make for ease in handling, storing and fitting and has made it possible to produce a unit which requires only a single housing and feed point. The installation of a quick release reflector and tube, providing easy maintenance, has also been made possible by the design of the fitting.

The main casing of the fitting is of cast aluminium, in which a 40 Watt 110 or 240 Volt circular fluorescent tube is positioned by quick release fasteners and shock absorbing pillars to a critically designed specular anodized aluminium reflector, which gives a good wide light distribution.



The Dunelm Flameproof Circular Fluorescent Mine Lighting Fitting made by Clarke, Chapman & Co. Ltd.

The Dunelm mine lighting fittings are of three types: (1) Non-Flameproof Roadway; (2) Flameproof Roadway, and (3) Flameproof Coal-face.

The flameproof units are fitted with Armourlight glass domes, whereas the non-flameproof unit is of a lighter design, having a Perspex dome and weighing only 21 lb. Each type is provided with means for attachment of a protective wire guard, which can be supplied if required.

In the Flameproof Coal-face fitting only the filament heating transformer is required and this reduced the weight of the fitting. The principle employed for this type of lighting is that of the wander lead system, where the main cable is run along the coal face between the conveyor and the goaf side timber. Junction boxes placed along this cable are each fitted with a plug for connection to the wander lead socket on the lamp fitting. By this system, the workman can place the lamp in the most suitable position.

The junction box houses Transtar control gear, safety switch and a starting switch, the latter giving individual switching of each unit. The safety switch automatically cuts off the supply to the lamp and cable, in the event of the lamp being damaged.

Thus it can be seen that each fitting is an independent unit and that damage to one will not interfere with the operation of the other coal-face units.

Two types of fluorescent tubes for these fittings are being manufactured: (a) Standard Daylight colour and (b) A highly efficient light apple-green colour, especially recommended for coal-face lighting because of its high light output and its aesthetic value in underground conditions.

The manufacturers claim that this new type of mine lighting has the following advantages: (1) The units are shockproof; (2) They can be supplied for any voltage without extra charge; (3) The Transtar control gear provides instantaneous starting; (4) Low surface brightness produces no glare; (5) The fitting is at low temperature; (6) The tube has a life of approximately 4,000 hours, and (7) By means of a special fastening, the lamp can be adjusted to any position and affixed on any prop or roof guide. Furthermore, they point out that a Flameproof Certificate is pending.

New U.S. Diesel Engine

A new Diesel engine with more power, economy, and performance and longer life has been introduced for General Motors' lorries and tractors. Built to haul a million miles and more, the engine is a new design of the established engines. Mr. Keyes, vice-president of General Motors, described the new engine as "the greatest step forward in Diesel power development" for the road transport industry since 1938.

Horsepower in the four-cylinder "million miler" has been increased to 150 b.h.p., from 133, and in the six-cylinder engine to 225 b.h.p. from 200. Despite this horsepower increase, the engine is stated to use less fuel, mainly because of a device called a "fuel modulator." The company described the modulator as "an automatic control that feeds exactly the right amount of fuel and air for maximum efficiency regardless of throttle position." It acts like a mechanical "brain," and exerts its modulating effect on the flow of fuel at engine speeds below 1,500 r.p.m., the point where previously a driver could "lug" the engine and waste fuel by operating the vehicle in an uneconomical gear range when he should have shifted into another. The fuel modulator also contributes toward longer engine life by preventing engine abuse, the statement added. Lastly, it restricts sludging up and carbon deposits, and thus reduces the need for maintenance.

Goodyear Conveyor Belt for Chile

The largest conveyor belt ever built at the factories of the Goodyear Tyre & Rubber Co. at Wolverhampton has just been shipped from Wolverhampton to Chile, where it is to be used in nitrate mining, working 24 hours a day for 7 days a week.

The length of the belt is 1,200 ft.; it is 48 in. wide and weighs 13.7 tons. The belt is of 42 oz. duck construction, 9 plies, with cover thickness totalling 9/32 in.

References to other large conveyor belts shipped for mining service abroad, e.g., to Freetown, Sierra Leone; Sweden, and to the Bou-beker lead mine in the High Atlas, French Morocco, were made in *The Mining Journal*, September 8, 1950, and May 25, 1951.

Metals, Minerals and Alloys

The importance attached to the International Materials Conference discussions, especially it would seem by the British Government, is a little clouded by current reports from the United States, according to a Reuter report. The Central group stated last week that the allocation scheme so far adopted was only *ad hoc* measures involving no commitments as to principles of distribution. They found it was too early to make a reliable appraisal of the nature of the problem which the I.M.C. would have to solve to ensure the effective carrying out of the allocations. Mr. Simon Strauss, vice-president of the A.S. & R. Co., has stated that in his opinion it would be difficult to reach a unanimous agreement with fifteen to twenty nations involved, and that any arrangement can only be effective with the full co-operation of all major producing and consuming countries. He considered that price controls had been poorly handled.

The N.P.A. has published general rules for its recently established administrative "Court" to act on charges of alleged violations of their orders and regulations. Violations will be penalized by refusal to allow expenses incurred in such operations.

Copper.—While the copper strike at the mines and smelters in the U.S. has been temporarily dodged by the operation of the anti-strike injunction, trouble is still threatened in the fabricating industry of Connecticut, where a strike by the U.A.W. Union of the C.I.O. was due to begin on Monday. However, with the entry of damage suits against the Union its leaders have ordered a return to work. Copper is now said to be in shorter supply than all the other non-ferrous metals and the cutback in the allocation to consumers' durable goods industries, now 60 per cent of the base figure, is likely to be further reduced in the fourth quarter of the year, below the 54 per cent previously announced. Washington is reported to be again considering raising the price ceiling for domestic copper. Imports have heavily declined this year, the figure for the seven months being 128,424 s.tons of metal, compared wih 190,489 s.tons for the same period of 1950 while the arrivals of ores, matte and regulus were 61,926 s.tons against 64,570 tons last year.

In Switzerland the use of copper and copper alloys has been prohibited except under special government permit, following the requests for curtailment by the O.E.E.C. In Italy use restrictions are being felt in all branches of production.

U.K. imports in August totalled 30,370 tons (22,619 tons electro and 7,751 tons blister), as compared with 31,311 tons in July and 33,973 tons in June.

Lead.—The seriousness of the drop in lead imports into the U.S. this year—principally due to reductions from Mexico, is illustrated by the figures for the first seven months during which metal arrivals were 91,990 s.tons as compared with 238,433 s.tons in the same period of last year. Imports of concentrates and matte were less affected but were 36,821 s.tons against 41,673 s.tons. As the O.P.S. has refused to approve price premiums on Canadian lead Canadian producers have refused to negotiate new contracts with U.S. consumers. However, the O.P.S. are apparently envisaging the eventual decontrol of their present ceiling prices, and adopting the dual price system existing in copper.

U.K. imports in August were 27,508 tons (Australia 22,650 tons) as compared with 13,222 tons in July.

Tin.—Two conferences affecting tin are currently proceeding, the Tin Study Group's meeting at Rome and the Commonwealth Raw Materials Conference; though it is too early yet to learn anything of their probable outcome.

Early impressions of the Rome meeting of the Tin Study Group appear to be pessimistic so far as any advance on former deadlocks is concerned. The British Government, which is naturally looked to to take the lead among the major tin producers, is said to be unwilling to do anything which might be unpopular in the United States. Proceedings are expected to last for a fortnight.

The discussions between the R.F.C. and the Bolivians were expected to open last Monday, but the figures gathered by the U.S. mission to Bolivia last July are considered out-of-date, and the necessity of obtaining later figures from Bolivia may possibly delay the proceedings.

Meanwhile the uncertainties imported into the general situation by the suspension of purchases of metal and concentrates by the R.F.C. and the G.S.A. appear to be causing the Congo to reduce operations, or at any rate to hold back supplies. The output which fell to 925 tons in July was down to 643 tons last month. On the other hand, the Indonesian output in August improved to 2,478 tons, as compared with the July figure of 2,287 tons.

U.K. imports of metal in August were 1,344 tons (1,310 tons in July); and of concentrates 2,776 tons (4,817 in July). Imports from Bolivia were 1,904 tons against 3,892 tons a month earlier.

In Thailand production up to the end of May was 5,406 tons, some advance on the 1950 figures for the same period, but price, which appears to have reached its highest point in April at 3,200 ticals per pikul has since receded as a result of the R.F.C.'s price cuts and at the beginning of September was put down to 1,700 ticals. Of the total output 3,810 tons went to the Straits and 1,312 tons to the U.S., according to a Reuter despatch from Bangkok.

Zinc.—U.S. zinc producers report that recent interferences with normal trade by defence planners have completely unsettled the zinc trade. Particularly annoying has been the instruction that after having sold to consumers the zinc diverted from the stockpile, they have been called upon to ship it for examination purposes by the stockpile authorities. As most of the large producers had completed 80 per cent of their September shipments, the cutbacks cannot be secured, but the restriction on October allocations will probably be increased to make up. Imports of zinc metal into the U.S. for the first seven months of the year were 54,919 s.tons compared with 95,092 s.tons for the same period of last year. On the other hand, imports of concentrates improved to 179,487 s.tons compared with 145,138 s.tons.

Canada has withdrawn all offerings of zinc as well as of lead, and want a price of 22c. per lb. against the basic U.S. figure of 17½c.

U.K. August imports of zinc metal were 9,255 tons (July 11,449 tons). Canada contributed nearly half the total. Concentrates imports in August totalled 28,301 tons (15,060 tons in July).

Aluminium.—U.S. production of aluminium in July was 72,698 s.tons, the highest figure since May 1944. The U.S. mobilization director, has directed all major producers (five operating in Oregon and Washington and two planned in Washingon and Montana) to prepare plans for moving out of the Pacific North-West unless the threatened power shortage is quickly overcome. He added that a study of electric power prospects in this region indicated that it might be advisable as a defence measure to re-allocate aluminium plants. The plants involved represented about half the country's production.

There are plans in India to enlarge the two existing aluminium-producing plants as their present output is only 3,678 tons yearly, and the country's requirements are estimated at 15,000 tons. The Italian producers have asked the prices committee to increase their ceiling by L.75 per kilo to L.430 to meet increased labour and raw

material costs. Exports are at present at an annual rate of about over 11,000 tonnes.

U.K. imports of aluminium in August were 21,657 tons almost wholly from Canada, against 21,975 tons in July; bauxite imports were 52,793 tons (43,148 tons in July).

Antimony.—U.K. imports of antimonial concentrates in August were 1,127 tons (2,729 tons in July).

Asbestos.—U.K. imports of asbestos were 7,679 tons (12,146 tons in July). Canada was again the largest importer.

Bismuth.—U.K. imports in August were 80,267 lb. (50,075 lb. in July).

Borax.—U.K. imports of borax were 2,339 tons against 1,694 tons in July.

Cadmium.—U.K. imports of cadmium in August were 221,928 lb. (91,021 lb. in July).

China Clay.—U.K. exports of china clay were 34,920 tons in August (35,855 tons in July).

Chromite.—U.K. imports of chromite in August were 7,449 tons (15,096 tons in July). Ferro-chrome imports were 1,489 tons (2,095 tons in July).

Cobalt.—U.K. imports in August were 387,808 lb. (397,883 lb. in July).

Magnesium.—The production of magnesium is being stimulated especially in the United States, where the output of the first seven months, according to the Department of Mines was 15,217 s.tons as compared with 15,726 s.tons for the whole of 1950. Production has been increased greatly by the output of four re-activated government-owned plants and two more were due to start in August. We may therefore expect that the total output for the year may approximate 30,000 s.tons as compared with, say, 40,000 s.tons for the world in 1940. This figure rose to a maximum of 237,777 s.tons in 1943. The U.K. production, including secondary material in 1950 is given as 5,039 tons. U.K. imports of magnesite for the first eight months of the year were 38,425 tons.

Manganese.—U.K. imports of manganese in August were 34,867 tons (31,534 tons in July). The Gold Coast was again the major importer.

Molybdenite.—U.K. imports of molybdenite concentrates were 424 tons (July 138 tons).

Nickel.—Mr. Beattie, vice-president and general manager of International Nickel Corporation in Canada, has announced the completion of the two big expansion undertakings of the company, the construction of a new 10,000 ton mill at Creighton Mine, and of the deepening of the Creighton No. 7 shaft, which is now down to 2,050 ft.

The Governor of Dutch New Guinea has stated that Dutch concerns are anxious to develop nickel and chromite deposits in Eastern New Guinea while Australian interests were seeking timber concessions in North New Guinea. In France a growing nickel famine is apparent. Practically no foreign imports have been received this year and the New Caledonian production has been restricted by coal shortage. A commission is visiting the island to try and improve the situation.

U.K. imports of nickel in August were 344 tons (July 443 tons); concentrates and matte were 1,723 tons (3,759 tons in July).

Quicksilver.—Business has picked up in the U.S. for autumn buying, and the prices have been advanced to $215/220 per flask. U.K. imports in August were 235,688 lb. (152,484 lb. in July).

Sulphur.—U.S. production of native sulphur in July was 458,025 tons bringing the production for seven months up to 3,052,418 tons compared with 3,009,506 tons in the same period last year.

U.K. imports in August were 35,865 tons (49,089 tons in July). America remains practically the sole importing country. Imports of pyrites were 23,833 tons (31,460 tons in July).

Titanium.—U.K. imports of ilmenite in August were 5,530 tons (3,655 tons in July).

Tungsten.—A moderate business in wolfram is reported this week at the controlled price of 525s. c.i.f. but in some quarters a rise in the ceiling is looked for in view of the scarcity of supply. Whether, however, anything will be done before the Election is doubtful.

Thailand's exports of wolfram concentrates in the first five months of the year were 488 tons. No substantial increase is expected on this rate owing to equipment and transport difficulties. The highest price recorded was 6,500 ticals per pikul and at the beginning of the month was around 5,200. It was stated in the Burmese parliament that Thailand bandits had seized the Nammyin mines in Mergui. A government spokesman said that enquiries would be made with the object of taking action.

A company with the title, Pioneer Scheelite N.L., has been formed in Melbourne with a capital of £A.200,000 to acquire the Pioneer Wolfram and Scheelite mine at Hatches Creek, in the Northern Territory. The Company proposes to spend £A.65,000 to open and equip the mine and provide housing amenities.

U.K. imports of tungsten concentrates in August were 342 tons (302 tons in July). Portuguese supplies improved slightly to 114 tons.

The London Metal Market

(From Our Metal Exchange Correspondent)

During the last week there have been very small turnovers on the London Metal Exchange as everyone is waiting for results or communiqués from the negotiations between the U.S. Government and the Bolivians, and the International Conference in Rome. With regard to the former it is worthwhile noting that under the "Havana Charter" any price agreed with the Bolivians would almost certainly have to be the minimum which could be applied to any new contracts made for ore from Indonesia and Belgium.

No startling facts seem likely to emerge from the International Conference in Rome, but it is rumoured that in view of Mr. Symington's declarations the producer countries may examine the possibilities of getting together and sponsoring some new international tin scheme based on their point of view, which calls for machinery to ensure a reasonable minimum price for the whole of their production, thus permitting orderly planning for development.

On Thursday the official close on the tin market was: Settlement price £975, Cash Buyers £970, Sellers £980; Three months' Buyers £920, Sellers £925. In the afternoon the market was steady. Turnover for the day was 200 tons. Approximate turnover for the week was 560 tons.

The Eastern price on Thursday morning was equivalent to £899 7s. 6d. per ton, c.i.f. Europe.

Iron and Steel

No substantial relaxation of the stringency in regard to iron and steel supplies is at present in sight. In contrast with the conditions abroad, particularly in the U.S.A. where new output records are being achieved, British steel plants are working well below capacity owing to the shortage of materials and early amelioration is regarded as highly improbable. The situation is all the more deplorable since requirements, swollen by the Defence programme, and a very heavy overseas demand, were never so great. The overall deficiency is officially estimated at no more than ten per cent, but when priority orders have been met, the shortages in the tonnage of steel available for other users are much more substantial.

One of the limiting factors is the scarcity of coke. It is quite clearly apparent that the current output of pig iron

is insufficient to meet present needs, and additional blast furnace capacity is available but some of the furnaces now operating are not working to the limit and fresh units cannot be blown in until more coke is available. Meanwhile, many of the engineering and speciality foundries with very heavy order books, are held up through the shortage of pig iron. Imports of steel semis have fallen to a very low level and the shrinkage in home steel production has adversely affected deliveries from British steel plants.

Amongst the big steel consuming industries there are growing apprehensions of a tight squeeze for supplies during the coming winter, and these apprehensions are now shared by the workers at the steel plants.

The shortage of zinc is also adversely affecting the production of galvanized sheets. For these there is an abnormally swollen demand but distribution is strictly controlled and non-assorted users are at the end of a long queue waiting for supplies.

Under all these difficult circumstances the prospect of a resumption of official control a month hence is not wholly unwelcome and producers will probably be glad to be relieved of the individious task of discriminating between the rival claims of old customers.

SEPTEMBER 27 PRICES

COPPER

Electrolytic	£227 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£180 0 0 d/d
Soft empire, including secondary lead ...	£180 0 0 d/d
English lead	£181 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ...	£190 0 0 d/d
G.O.B. spelter, domestic	£190 0 0 d/d
Electrolytic and refined zinc	£194 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£390 per ton
Crude (70%)	£305 per ton

NICKEL

99.5% (home trade)... ...	£454 per ton

OTHER METALS

Aluminium, £124 per ton.	Platinum (scrap), £27.
Bismuth, 27s. 3d. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 18s. 9d. lb.	Rhodium, £45 oz.
Chromium, 5s. 11d. lb.	Ruthenium, £30 oz.
Cobalt, 17s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 78½d. f.oz. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	65% 18s. 3d. lb. c.i.f. 60% 17s. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
,, ,, (concentrates)	£13 per ton c.i.f.
,, ,, Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£13 18s. 6d. per ton c.i.f.
Magnesite, ground calcined...	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian ...	(Nominal)
Molybdenite (85% basis) ...	103s. 6d. per unit c.i.f.
Wolfram (65%), U.K. ...	525s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture) ...	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home ...	£39 17s. 1d. per ton
Ferro-manganese, export ...	Nom.
Brass Wire	2s. 7½d. per lb. basis.
Brass Tubes, solid drawn ...	2s. 1d. per lb. basis.

Mining Men and Matters

Professor Sir Eric Rideal has been appointed a member of the Advisory Council for Scientific & Industrial Research effective as from October 1 in succession to Professor H. W. Melville, who will retire from the Council at the end of September.

The Iron & Steel Corporation of Great Britain has announced that they have decided to reconstitute the boards of Guest, Keen & Baldwins Iron & Steel Co. and Guest, Keen & Nettlefolds (South Wales) Ltd. The full-time executive directors of the reconstituted board of Guest, Keen & Baldwins Iron & Steel Co. will be: Mr. C. R. Wheeler and Mr. T. Jolly, joint managing directors, Mr. E. H. Lever, Mr. H. F. Spencer and Mr. J. S. Hollings. The full-time executive directors of Guest, Keen & Nettlefolds (South Wales) Ltd., will be: Mr. N. R. Brook, general manager, Mr. G. A. Phipps, works manager and Mr. E. Brown, commercial manager.

Guest Keen & Nettlefolds (South Wales) Ltd. was previously a wholly owned subsidiary of Guest, Keen & Nettlefolds, and prior to nationalisation it was "hived off" from the parent company. The board changes, states the circular issued by the Iron & Steel Corporation of Great Britain, are a logical consequence of the public ownership of the companies and they constitute a step in the integration and the economic working of the steel industry in South Wales. The circular also states that the reorganization of the management of these two companies will bring them into close association with Richard, Thomas & Baldwins Ltd.

Business Items

Mr. F. R. Mason has been appointed a director of Metropolitan-Vickers Electrical Export Co. at Trafford Park.

Dr. W. I. Pumphrey has been appointed to the position of research manager at Murex Welding Processes Ltd. in succession to Dr. E. C. Rollason, who has left the company to take up his appointment to the Henry Bell Wortley Chair of Metallurgy at Liverpool University, on October 1.

The United Steel Companies have announced that their research and development departments are being moved to Swindon House and that all future communications should be addressed to The United Steel Companies, Ltd., Research & Development Department, Swindon Laboratories, Moorgate, Rotherham.

The metallurgical, chemical, physics, X-ray and welding sections are, however, still at Stocksbridge, but will be transferred gradually to the new laboratories in the near future.

Cyprus Mineral Exports, June.—Total declared value of the output from Cyprus last June amounted to £563,184. Cupreous concentrates totalled 10,100 tons; cupreous pyrites, 5,900 tons; iron pyrites, 48,680 tons; asbestos, 2,246 tons; umber, 631 tons; bentonite, 503 tons; gypsum, 290 tons; yellow ochre, 30 tons. The labour force rose during the month to 6,805.

French Morocco's Principal Mineral Exports, Jan.-June, 1951.—Mining production was active in French Morocco during the first half of the year. The principal exports were 2,302,734 tonnes of phosphate; 259,401 tonnes of iron ore; 25,413 tonnes of lead concentrates and 7,411 tonnes of metal; 19,443 tonnes of zinc concentrates; 154,298 tonnes of manganese ore; 3,518 tonnes of cobalt ore; 965 tonnes of antimonal ore; 40 tonnes of beryllium; 64 tonnes of mica; 30 tonnes of graphite and 126,112 tonnes of anthracite.

India's Output of Coal and Important Minerals, 1950.—India produced 32,298,713 tons of coal in 1950, according to official figures issued in New Delhi. The coal stocks at the collieries on the last day of the year were 2,147,246 tons. On an average 375,255 males and 96,506 females were employed in 1950 daily in all the mines in India.

Production of some other important minerals in India in 1950 was: gypsum, 28,788 tons; graphite, 12,297 cwt.; iron ore, 2,734,635 tons; limestone, 2,268,012 tons; manganese ore, 769,579 tons; magnesite, 48,524 tons; and mica, 138,685 cwt.

Tanganyika Mineral Exports (6 months).—Mineral exports from Tanganyika in May showed a further drop on the declining tendency of earlier months this year. Items were as follows: diamonds, 583 ct.; gold, 3,878 f.oz.; silver, 1,940 f.oz.; lead concentrates, 234 tons; sheet mica, 6¼ tons; tin concentrates, 6 tons and salt, 265 tonnes.

Exports in June in order of value were gold, 5,337 f.oz.; lead, concentrates, 705½ tons; sheet mica, 11.78 tons; tin concentrates, 101.4 tons; tungsten concentrates, 5.11 tons; diamonds, 481 ct.; salt, 259 tonnes.

The value for the six months' exports was £788,035 as compared with £1,167,394 in the same period of last year.

The Mining Markets

(By Our Stock Exchange Correspondent)

The London stock market showed few signs of last week's burst of confidence and optimism. The current period was distinguished by a return to caution on the part of investors in all markets and many of last week's gains were washed out by marking down of prices by wary jobbers.

Gilts were given another push downhill by the announcement of a new £3,250,000 Agricultural Loan to be issued at par. This is to carry a 3½ per cent interest rate and is redeemable 1961/63. As this stock will ultimately be subject to stamp duty, informed quarters are doubtful of the success of the issue. Mr. Gaitskell's hint of a coming balance of payments crisis for the whole of the sterling area, coupled with the news of the Persian ultimatum to the Anglo-Iranian Oil Co. deepened the existing gloom.

Kaffirs, while turning idle, maintained many of their gains. There was some demand for the leading finance houses, particularly Consolidated Goldfields and Consolidated Mines Selection, both of which are registered in the U.K. Buying for French accounts was reported to be less than during last week. There was a slight revival of interest in leading producers, but the actual volume of business was not great. Recent rumours of a pending new issue by Doornfontein were confirmed. Fresh funds are required to finance a development programme from the Annan shaft. Doornfontein shareholders are to be offered 2,808,000 new 10s. shares at 23s. in the ratio of two new shares for every five held. At the current market level of 26s. 3d. for the old shares, the rights are expected to be worth a little less than 1s. per share. West Wits, which hold 1,308,428 Doornfontein shares, are offering their shareholders one new 2s. 6d. share at 40s. for every 20 held. Market circles in Johannesburg and London still anticipate that following the recent I.M.F. Conference, some official announcement on the gold price policy will be made before long.

The Yukon Gold Corporation declared a dividend of 10c. a share in respect of 1950. Following the announcement the $1 shares rose to 5s. 7½d. before reacting to 5s. 3d.

O.F.S. issues were a listless market. Prices where changed tended to slide downwards.

West Africans continued last week's better tone, but much quieter conditions reigned. Most of the leading mines would benefit from any improvement in conditions of gold sales, and rumours of a pending revision of the gold export duty have again been current, although without any apparent foundation.

Casts, alone among diamond shares, improved. Being registered in the U.K. the company stands to benefit from any amelioration in proposed dividend limitation conditions. The company should also benefit from this year's 15 per cent increase in the price of stones. The interim dividend was raised in May from 20 per cent to 25 per cent and market circles are hoping for a final dividend of at least 75 per cent. Last year's total distribution was 80 per cent.

Coppers improved mainly on political hopes, although many of the earlier gains were reduced by a dull tendency later in the week. Considerably more interest was shown in the Spanish operating companies of Rio Tinto and Tharsis Sulphur, while Tanks were a strong feature on the increased interim dividend by Union Minière. This amounted to 500 Belgian francs a share against Frs. 400 for 1950.

Lead/zinc issues improved, especially Barriers. Broken Hill South earned a net profit of £1,757,925 for the year ending June 30. This represents an increase of £616,740 over the previous year's figures. The company is paying a final dividend of 100 per cent, making 160 per cent for the year against a total distribution of 120 per cent for 1949/50.

FINANCE	Price Sept. 26	+ or − on week
African & European	3⅜	
Anglo American Corpn.	8⅛	
Anglo-French	21/10½	
Anglo Transvaal Consol.	38/9	
Camp Bird	13/6	+ 3d
Central Mining (£1 shrs.)	46/3	
Consolidated Goldfields	50/-	+ 3/1½
Consol. Mines Selection	35/-	+ 2/6
East Rand Consols	4/6	+ 1½d
General Mining	6½	+ 1/3
H.E. Prop.	36/3	
Henderson's Transvaal	11/-	
Johnnies	3⅜	+ 1/16
Rand Mines	6⅝	+ 1/16
Rand Selection	43/9	+ 1/3
Union Corporation	10⅜	
Vereeniging Estates	5⅜ XR	+ 1/16
Writs	31/3	+ 7½d
West Wits	46/3	+ 7½d
RAND GOLD		
Blyvoors	51/6	+ 1/3
Brakpan	20/7½	+ 7½d
City Deep	2⅜	
Consol. Main Reef	2⅛	+ 1/16
Crown	4⅛	+ 1/16
Daggas	3⅜	+ 1/16
Dominion Reefs	1/9	
Doornfontein	26/3	− 6d
Durban Deep	3⅛	
E. Daggas	26/10½	+ 7½d
E. Geduld ... (4/- units)	53/9	+ 1/6
E. Rand Props.	4⅛	+ ⅛
Geduld	1	+ 1/16
Grootvlei	38/-	+ 6d
Libanon	16/6	− 3d
Luipaards Vlei	22/3	+ 3d
Marievale	21/6	+ 3d
Modderfontein B.	5/-	− 3d
Modderfontein East	37/6	
New Kleinfontein	32/6	
New Pioneer	22/6	
Randfontein	18/9	
Robinson Deep	14/9	
Rose Deep	35/7½	+ 1/10½
Simmer & Jack	6/10½	+ 1½d
Springs	10/1½	+ 4½d
Sub Nigel	3⅛	
Van Dyk	15/3	
Venterspost	28/9	
Vlakfontein	18/9	+ 3d
Vogelstruisbult	28/-	
West Driefontein	6⅜	+ 3/9
W. Rand Consolidated	44/4½	+ 1/7½
Western Reefs	41/9	− 9d
O.F.S.		
Alpha F.S.A.	11/3	
Blinkpoort	22/6	
Central Mining F.S.	5/-	− 1½d
Freddies	12/3	− 3d
Freddies N.	11/3	
Freddies S.	13/-	
F.S. Geduld	3½	− 1/16
Geoffries	28/3	− 1/-
Harmony	24/3	− 9d
Lydenburg Estates	11/3	+ 9d
Middle Wits	25/-	− 3d
Ofsits	48/1½	− 1/3
President Brand	22/3	− 3d
President Steyn	18/3	− 6d
St. Helena	29/-	+ 3d
U.F.S.C. & G.	9/-	− 3d
Virginia Ord.	13/6	− 3d
Welkom	38/1½	
Western Holdings	3⅛	
WEST AFRICAN GOLD		
Amalgamated Banket	2/1½	
Ariston	7/1½	
Ashanti	29/6	+ 1/3
Bibiani	10/-	
Bremang	3/1½	+ 1½d
G.C. Main Reef	3/6	
G.C. Selection Trust	8/9	+ 10½d
Konongo	2/6	+ 3d
Kwahu	4/3	+ 3d
London & African Mng.	2/3	+ 3d
Lyndhurst Deep	1/3	
Marlu	2/3	
Nanwa	6d	
Taquah & Abosso	7/3	+ 3d
AUSTRALIAN GOLD		
Boulder Perseverance	3/1½ XD	+ 1½d
Gold Mines of Kalgoorlie	15/1½	− 4½d
Great Boulder Prop.	6/9	− 3d
Great Western Consol.	2/9	
Lake View and Star	21/4½	− 1½d
Mount Morgan	18/3	− 9d
North Kalgurli	18/3	
Paringa	10d	+ 1d
Sons of Gwalia	11/-	
South Kalgurli	8/6	− 3d
Western Mining	7/9	
Wiluna	12/3	
MISCELLANEOUS GOLD		
Cam and Motor	34/4½ XD	+ 3d
Champion Reef	11/-	+ 3d
Falcon Mines	10/4½	− 3d
Globe & Phoenix	24/-	+ 3d
MISCELLANEOUS GOLD (contd)		
G.F. Rhodesian	9/-	
London & Rhodesian	5/7½	
Motapa	2/9	
Mysore	6/1½	− 1½d
New Guinea	2/-	
Nundydroog	7/3	− 3d
Ooregum	3/3	
Oroville	14/4½	
St. John d'El Rey	40/-	− 2/6
Zams	37/6	+ 1/9
DIAMONDS		
Anglo American Inv.	4⅜	− 1/16
Casts	41/6	+ 3/9
Cons. Diam. of S.W.A.	4⅛	− 1/16
De Beers Defd. Bearer	70/-	− 1/3
De Beers Pfd. Bearer	16⅞	
COPPER		
Chartered	74/-	+ 9d
Indian Copper	4/3	− 1½d
Messina	6⅜	− 1/16
Nchanga	7⅛	+ 1/16
Rhod. Anglo-American	65/-	+ 2/6
Rhodesian Selection	21/3 XD	+ 1/9
Rhokana	22⅛	+ 1/16
Rio Tinto	23⅛	+ 1½
Roan Antelope	13/1½ XD	+ 10½d
Selection Trust	50/7½	+ 1/3
Tanks	52/3	+ 2/3
Tharsis Sulphur Br.	52/6	+ 1/3
TIN (Eastern)		
Anglo-Burma	2/9	+ 3d
Kent Hitam	28/3	+ 1/-
Bangrin	33/9	+ 2/10½
Gopeng	15/6	+ 6d
Hongkong	11/-	+ 4½d
Ipoh	30/7½	+ 1/1½
Kamunting	13/3	+ 6d
Kepong Dredging	13/9	+ 9d
Kinta Tin Mines	16/9	+ 7½d
Kramat Pulai	4/3	
Malayan Dredging	24/3	
Pahang	16/7½	+ 2/1½
Pengkalen	11/6	+ 6d
Petaling	14/-	+ 6d
Rambutan	17/6	
Siamese Tin	23/1½	+ 1/7½
Southern Kinta	14/7½	+ 6d
S. Malayan	29/6	+ 1/3
S. Tronoh	25/9	+ 1/9
Sungei Kinta	18/9	
Tekka Taiping	9/3	
Tronoh	30/-	+ 1/-
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	9/-	
Beralt Tin	25/6	+ 1/9
Bisichi	4/-	+ 1½d
British Tin Inv.	17/10½	+ 1/1½
Ex-Lands Nigeria	7/3	+ 4½d
Geevor Tin	15/9	+ 2/-
Gold & Base Metal	3/9	+ 3d
Jantar Nigeria	7/4½	+ 4½d
Jos Tin Area	11/-	
Kaduna Prospectors	4/-	
Kaduna Syndicate	6/3	+ 3d
London Tin	6/3	+ 3d
Ribon Valley	1/1½	
United Tin	3/3	+ 4½d
SILVER, LEAD, ZINC		
Broken Hill South	59/6	+ 9d
Burma Corporation	3/7½	
Consol. Zinc	35/9	+ 1/3
Lake George	27/9	+ 1/9
Mining Trust	7/9	− 1½d
Mount Isa	49/6	+ 3d
New Broken Hill	29/9	+ 1/-
North Broken Hill	80/-	
Rhodesian Broken Hill	22/6	+ 1½d
San Francisco Mines	36/9	+ 1/3
Trepca	4/1½	+ 3d
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	60/-	
Associated Manganese	70/-	− 2/6
Chinese Engineering	3/-	+ 3d
C.P. Manganese	51/6	+ 4/9
Natal Navigation	5½	− ⅛
Wankie	23/6	+ 10½d
Witbank Colliery	3⅞	
CANADIAN MINES		
Dome	$32	
Hudson Bay Mining	$115	
International Nickel	$79½	− 2½
Mining Corpn. of Canada	£6⅛	− ⅜
Noranda	$150	
Quemont	£9⅛	+ ⅛
OIL		
Anglo-Iranian	5⅜	− ⅛
Apex	50/7½	+ 3/1½
Attock	24/4½	+ 1/3
Burmah	63/9	+ 1/10½
Canadian Eagle Bearer	36/10½	+ 3d
Mexican Eagle	26/9	− 7½d
Shell	4¼	
Trinidad Leasehold	32/6	+ 7½d
T.P.D.	38/1½	+ 7½d
Ultramar	33/-	+ 2/1½

Company News & Views

Johnnies Strong Financial Position

Profits of Johannesburg Consolidated Investment for the year to June 30 last advanced by £246,963 to £1,628,647. But taxation liabilities of £745,110, an increase of £153,267 over the previous year's charges, absorbed a sizeable portion of this prosperity with the result that net profit figured at £883,937 compared with £789,841. Nevertheless the company was able to immeasurably strengthen its financial position by the transfer of £500,000 (£300,000) to reserves, which brought that fund's total to £5,500,000, and at the same time easily maintain its annual dividend at 3s. 6d. per share. This required a sum of £362,906, leaving the carry forward at the fiscal year-end higher by £20,631 at £372,560.

The latest balance sheet records some impressive results. Total book cost of investments increased by £1,944,665 to £11,870,018, and cash resources were up by £479,551 to £2,016,271. Excluding the book figure for investments, net liquid assets amounted to £2,231,000.

The directors in their report state that they are continuing the practice, first adopted with respect to the accounts for the year to June 30, 1949, of making adjustments in the values of investments through the investment reserve rather than through the profit and loss account, and that in the year under review £157,913 was added to investment reserve to adjust the existing book values. In the previous year £133,172 was deducted from investment reserve. It was further stated that it is not considered that the Stock Exchange quotation of the company's holdings at any given date provide a reliable measure of their market value, and that while an accurate assessment of the market value of certain investments presents considerable difficulty, the directors are of the opinion that the aggregate market value of the company's investments is substantially in excess of the value shown in the balance sheet.

A further point of interest contained in the directors' report was their announcement that investigations of certain areas in Eire and North Wales have now been completed, resulting in the acquisition of a controlling interest in the Abbeytown Mining Co. in County Sligo, and the forming of a wholly-owned subsidiary in North Wales, the Llanrwst Lead Mines Ltd.

Although it might be concluded that the company's dividend income from its investments in gold mining companies in the current year might show some reduction, it is highly probable that this will be offset by increased receipts from its holdings in copper and diamond companies.

Kalgoorlie Electric Passes Dividend

Despite the fact that during 1950 Kalgoorlie Electric Power and Lighting Corporation increased the number of units sold, a fall in the balance of Australian revenue from £28,116 to £20,133 resulted. This stems from the rising spiral of costs in Australia and has been a common experience amongst the gold mining companies which are Kalgoorlie Electric's principal consumers. Outgoing payments rose sharply due principally to the payment of interest on debenture stock (gross) of £10,034, which charge appears in the accounts for the first time.

Net profit after meeting tax liabilities amounting to £520, was £6,073 against £16,222. Depreciation reserve received a further £6,000, leaving the carry forward lower at £7,299 compared with £9,312 previously.

Company Shorts

Bushtick Mines.—For the year ended June 30, 1951, Bushtick Mines (1934), which is registered in Southern Rhodesia, showed a loss of £6,988, thus reducing the carry forward to £21,773, the whole of which the board has decided to appropriate for capital expenditure.

Mining operations at the Bushtick Mine ceased in May last and operations since that date have been confined to "cleaning up." For the 11 months of the year under review, tonnage milled totalled 114,400 yielding 12,933 f.oz. gold.

National Mining Corporation's Adverse Balance.—The National Mining Corporation, which carries on financial business in many different spheres, but more particularly in connection with mining and metallurgical industries, has published its report covering operations for the 15 months ended March 31, 1951. Gross revenue was higher at £32,879 (£20,900), but after deducting expenses and the net losses on realization of investments and on the sale of surplus stores, the loss for the period under review totalled £27,535. After writing off the cost of leases in Trinidad, writing down the book value of other assets and making provision for depreciation of investments, etc., the total adverse balance figure stood at £860,358.

The African Land & Investment Co.—Registered in the Transvaal in 1901, this company owns properties in Johannesburg, Cape Town and Laurenco Marques, its revenue being derived from profits on the sale of and dividends received from various shares and from rents received on and sales of its property. The company is controlled by New Consolidated Gold Fields.

During the year to June 30, 1951, net profit after tax was £24,728 against £28,750 previously. Nil, against £12,500, was placed to general reserve but the distribution was advanced to 25 per cent against 17½ per cent on its 112,500 Ordinary shares of 6s. 8d. The carry forward at the fiscal year-end was higher at £27,268 against £24,290.

Kamunting Tin On Dividend Limitation.—Kamunting Tin Dredging has declared a second interim dividend of 12½ per cent, or 7.5d. per share in respect of the year ending March 31 last, payable on October 25 next. This interim dividend brings the total interim distribution to 25 per cent for the year, which is the maximum annual dividend allowable under the terms of the recent White Paper on the control of dividends. However, in view of the application by Mr. A. G. Glenister, chairman of the Malayan Chamber of Mines, to the Chancellor of the Exchequer, on behalf of the tin mining companies for exemption under such legislation, the company has decided to defer final consideration of the accounts for the year ended March 31, 1951 and a possible final dividend until later in the year when the position should be clearer. The company will issue a circular to shareholders in the course of the next few days.

G.M.K. to Form New Company.—Gold Mines of Kalgoorlie have sent a circular to shareholders giving details of the company's proposal to liquidate and transfer its assets to an Australian company.

The circular states that "the company has been advised that, in view of the fact that the control and management of the company's business has in recent years been exercised in Australia, the present proposal is not within the ambit of the provisions of the recent U.K. Finance Act restricting the sale without Treasury consent of the business of a company resident in the U.K. to a non-resident."

An extraordinary meeting is being convened on October 9 to consider the proposal. If the proposal is carried the new company, Gold Mines of Kalgoorlie (Aust.) will be formed with an authorized capital of £A1,250,000 in 2,500,000 shares of 10s.A. Of these shares 1,536,875 will be issued credited as fully paid up to shareholders in the U.K. in the ratio of five stock units of 10s.A. for each four stock units of 10s. sterling.

The Australian company will have the same directors as the present company and will be represented in England by the present London secretaries, Broken Hill Secretariat, Ltd., 37, Dover Street, London, W.1.

The directors of the company strongly recommend members' acceptance of the proposal.

West Wits and Doornfontein Gold to Issue New Shares.—New share issues have been announced by West Witwatersrand Areas and the Doornfontein Gold Mining Co. Shareholders in West Wit. are to be offered 320,320 new 2s. 6d. shares at 40s. per share in the ratio of one new for every twenty held, while Doornfontein shareholders are to be offered 2,808,000 new 10s. shares at 23s. per share in the ratio of two new for every five held.

Circulars issued by these two companies state that Doornfontein's new issue is for the purpose of raising capital to finance a programme of shaft sinking, development and the installation of equipment to provide for milling at the rate of 48,000 tons per month. It is stated that development can be restarted from the Annan Shaft, about the middle of 1952, milling on a small scale by the beginning of 1953, expanding to the full mill capacity of 48,000 tons per month in 1957. At July 31 last Doornfontein's cash resources amounted to £669,695. The proposed new issue will provide additional funds of £3,229,200. This issue involves an increase in the company's authorized capital from £4,000,000 to £5,250,000, and an extraordinary meeting will be held in Johannesburg on October 17 next to consider a resolution to this effect. If passed, allotment letters will be posted on November 9.

West Wit. holds 1,300 shares in Doornfontein as a result of which it has the right to subscribe for 520,170 of the new shares, which will require a total outlay of £598,195. At June 30 last the company's net cash resources on hand amounted to £174,923 which had already been earmarked for the continuation of the company's drilling programme on its potential mining areas. The company's new issue will raise additional funds to the extent of £640,000, and allotment letters will be posted on October 24.

Both of these issues will be undertaken by New Consolidated Gold Fields, Anglo American Corporation and Central Mining, for a cash commission of 2½ per cent. Both issues are subject to Treasury consent for the U.K. portion of the issue.

August Mine Returns

Gold

WEST AFRICA

Amalgamated Banket.—57,953 tons yielded 6,826 oz.; profit £6,614.
Ariston.—27,900 tons yielded £118,246; profit £47,171.
Ashanti.—20,000 tons yielded 16,032 oz.; profit £83,545.
Bibiani.—30,000 tons yielded 6,281 oz.; profit £16,029.
Bremang.—610,500 yd. yielded 3,714 oz.; profit £22,442.
Gold Coast M.R.—8,383 tons yielded 3,076 oz.; profit £11,519.
Konongo.—1,440 tons yielded 2,156 oz.; profit £9,877.
Marlu.—40,100 tons yielded 2,454 oz.; loss £4,687.
Nanwa.—4,050 tons yielded 556 oz.
Taquah & Abosso.—20,000 tons yielded 4,865 oz.; profit £1,539.

INDIA

Champion.—14,620 tons yielded 6,058 oz.
Mysore.—16,200 tons yielded 5,507 oz.
Nundydroog.—19,658 tons yielded 4,444 oz.
Ooregum.—10,870 tons yielded 2,656 oz.

AUSTRALIA

Boulder Pers.—(August 15-September 11). 11,359 tons yielded 2,694 oz.
Central Norseman.—(August 15-September 11). 12,005 tons yielded 3,433 oz.
Croesus Prop.—(July 17-August 14). 7,620 tons yielded 1,623 oz.
Golden Horse Shoe.—62,067 tons of tailings yielded 609 oz. gold and 514 oz. silver.
Gold Mines of Kalgoorlie.—(August 15-September 11). 12,794 tons yielded 3,330 oz.
Harrietville (Tronoh).—(August 26-September 22). 207,900 cu. yd. dredged yielded 429 oz.; value of output £A6,436.
Kalgoorlie Enterprise.—(August 15-September 11). 4,186 tons yielded 1,291 oz.
Kalgurlie Ore.—(July 17-August 14). 11,054 tons yielded 3,076 oz.
Lake George.—(July 30-August 26). 16,523 tons yielded 1,421 tons lead conc.; 2,330 tons zinc conc; 374 tons copper conc.
Lake View & Star.—(August 15-September 11). 98,339 tons yielded 11,173 oz.
Morning Star (G.M.A.".—(August 15-September 11). 1,628 tons yielded 672 oz.
Mount Isa.—52,435 tons yielded 2,835 tons lead-silver bullion assaying 79.9 oz. silver per ton and 4,369 tons zinc conc.
Mount Morgan.—(July 30-August 26). 192,964 tons yielded 5,626 oz. gold; 468 tons copper.
New Coolgardie.—(August 15-September 11). 4,150 tons yielded 2,346 oz.
Sons of Gwalia.—(July 14-August 14). 6,002 tons yielded 1,514 oz.

MISCELLANEOUS

Alpine (Barberton).—2,730 tons yielded 586 oz.; loss £327.
Brit. Guiana Cons.—78,401 cu. yd. Two dredges yielding 920 oz.
Cam & Motor.—21,000 tons yielded £59,958; profit £25,062.
Dominion Reefs.—30,000 tons yielded 2,071 oz.; loss 3,642.
Frontino.—9,896 tons yielded 5,728 oz.
Kentan.—16,500 tons yielded 2,292 oz.
Martha.—6,158 tons yielded 1,579 oz. gold, 8,691 oz. silver.
Motapa.—23,300 tons yielded 2,393 oz.; profit £3,345.
Rezende.—6,000 tons yielded £12,704; profit £1,337.
Rhodesian Corporation (Fred Mine).—3,700 tons yielded 644 oz.; profit £506.
Sherwood Starr.—2,480 tons yielded £3,520; profit £2,317.
St. John D'el Rey.—36,900 tons; value of output £246,805.
Thistle-Etna.—4,000 tons yielded 409 oz.; profit £355.
Transvaal-Gold.—28,000 tons yielded 5,021 oz.; profit £238.

Tin

MALAYA

Ampat.—92¾ tons tin conc.
Batu Selangor.—25½ tons tin conc.
Berjuntai.—55¼ tons tin conc.
Ipoh.—25 tons.
Jelapang.—21½ tons tin conc.
Kampong Lanjut.—46¼ tons tin conc.
Kamunting.—187 tons tin conc.
Kinta Kellas.—20½ tons.
Kinta Tin.—23 tons.
Klang River.—44 tons tin conc.
Kramat Tin.—33 tons tin conc.
Kuala Kampar.—154¾ tons tin conc.
Kuchal.—79¾ tons tin conc.
Larut.—59 tons tin conc.
Lower Perak.—76¾ tons tin conc.
Malaysiam.—3½ tons.
Pahang Consolidated.—240 tons tin conc.
Rahman.—52½ tons.
Rantau.—22¼ tons tin conc.
Rawang Conc.—53¼ tons tin conc.
Rawang Tin.—124¼ tons tin conc.
Renong.—70 tons.
Southern Kinta.—327¼ tons tin conc.
Sungei Kinta.—49½ tons.
Taiping.—21¼ tons tin conc.
Tambah.—(3 weeks). 11¼ tons tin conc.
Tanjong.—109 tons.
Tongkah Harbour.—56¼ tons tin conc.

NIGERIA

Amalgamated Tin.—382 tons tin conc.; 23 tons columbite.
Bisichi.—34 tons tin; 12 tons columbite.
Ex-Lands Nigeria.—48 tons.
Filani Tin.—7½ tons.
Gold and Base Metal Mines.—42 tons.
Jantar Nigeria.—22 tons tin; 18 tons columbite.
Jos Tin.—15 tons tin conc.
Kaduna Prop.—7½ tons.
Kaduna Synd.—22 tons.
Keffi.—23 tons tin conc.
Ribon Valley.—6 tons.
United Tin Areas.—12 tons.

MISCELLANEOUS

Bangrin Tin.—105 tons.
Beralt Tin.—198 tons wolfram.
Geevor.—(3 weeks). 50 tons black tin (65 per cent Sn).
Kamra.—20 tons conc.
Siamese Tin.—132 tons.
South Crofty.—22½ tons black tin; ½ ton wolfram.

Coal & Miscellaneous Base Metals

Amal. Collieries.—637,020 tons coal.
Apex Mines.—93,501 tons coal.
Biesbok Colliery.—39,748 tons coal.
Broken Hill South.—(August 12-September 8). 23,530 tons ore (assaying 71.7 per cent lead, 51.8 per cent zinc and 39.4 oz. silver) yielded 3,882 tons lead conc. and 4,821 tons zinc conc.
Coronation.—87,632 tons coal.
Natal Navigation Collieries.—136,442 tons coal.
New Broken Hill.—(July 22-August 18). 4,163 tons ore (assaying 9.2 per cent lead, 12.4 per cent zinc and 2.1 oz. silver) yielded 486.39 tons lead conc. and 913.74 tons zinc conc.
Rhodesia Broken Hill.—1,900 l.tons zinc and 1,200 l.tons lead, 22.90 tons fused vanadium.
South African Coal Estates.—147,136 tons coal.
Springbok Colliery.—71,647 tons coal.
Vryheid Coronation.—52,010 tons coal and 13,831 tons coke.
Wankie Colliery.—194,150 tons coal sales and 8,452 tons coke sales.
Witbank Colliery.—104,536 tons coal.

Topical News in Brief

Unesco to Lend Scientists to Brazil.—Unesco has agreed to lend Brazil two scientists. One will co-operate in the investigation of national mineral resources; the other will assist the National Observatory to prepare a magnetic map.

Appleby Slag Company Formed.—The slag processing plant of The United Steel Companies at its Appleby-Frodingham works is to be acquired and operated by the Appleby Slag Co., which has just been formed as a private company with a capital of £99,000.

Exploiting Minerals in Netherlands New Guinea.—According to reports from Amsterdam, considerable deposits of iron, cobalt, nickel and chrome ores have been discovered in the northern part of Netherlands New Guinea and a combine of Dutch mining companies is stated to have applied for a concession.

Coal Price Raised in South Africa.—The expected rise in the price of domestic coal in South Africa has now been confirmed. It has been announced in *The Government Gazette* that the maximum retail price of coal produced in the Transvaal and the O.F.S. has been increased by 3d. per 200 lb. The increase is attributed to higher pithead prices granted to collieries in the two provinces. However, the price of coal produced in Natal remains unchanged.

Indian Coal for Britain.—Following a report from Calcutta that the Bengal Coal Co. and the Equitable Coal Co. of Calcutta had sold 120,000 tons of gas coal for shipment to Britain before the end of December, the Minister of Fuel and Power has stated that the National Coal Board had been authorized to import limited quantities of Indian coal for gasworks, principally in the London area.

Scottish Ore Carriers Formed.—A new private company, Scottish Ore Carriers, has recently been registered in Edinburgh with a capital of £500,000 in £1 shares. Its object is "to acquire ships or shares or other interests in ships and aircraft and to carry on the business of ship-owners." A contract for two ore carriers for shipping iron ore to this country has already been placed.

Canada to Proceed Alone with St. Lawrence Seaway Project.—It is expected in Toronto that the Ontario Premier will shortly make an announcement to the effect that Canada will proceed alone with the construction of the St. Lawrence seaway. This is the result of continued opposition by U.S. interests against participation of the U.S. government in this important plan which would make it possible for sea-going vessels to reach the heart of the North American continent.

Japanese Experts for India.—Japan is sending a team of industrial, financial and agricultural experts to India to help draft plans for the development of resources under India's five year economic expansion programme. The mission will also take up the questions of trade and economic co-operation between Japan and India. The experts, who are expected to leave for India during October, will investigate the question of importing from India basic industrial materials which were previously obtained from China, including coal and iron ore, states a Reuter report from Tokyo.

East German Steel Plant Opened.—East Germany's largest steel plant, opened at Fuerstenberg on the Oder on September 19, is expected to produce 400,000 tons of steel and 1,000,000 tons of steel products annually from high quality Soviet ore and Polish coke, states a Reuter message from Berlin. Special roads and railway tracks link it to the East German and Polish traffic systems. The East German Minister for Heavy Industries described the new plant (its official name is "Volkseigeneseisenhuettenkombinat Ost") as the most modern iron ore processing plant in Europe. It is the largest single project of East Germany's five year economic plan, which began last January 1 and which is expected to double East Germany's industrial output.

Aluminium Developments in India.—The Government of India have announced the continuance of protection to the aluminium industry, in accordance with the recommendations of the Indian Tariff Board. While the existing protective duty of 30 per cent *ad valorem* would continue till May 14, 1952, the levy of additional specific duty on aluminium manufacture, like sheets and circles, and raw aluminium, including ingots, has been discontinued.

A Rs.20 crore aluminium factory in Salem, South India, and a Rs.3,500,000 synthetic precious stone factory near Madras, have been approved by the Planning Sub-Committee that met at Madras. The plan for the aluminium factory has been prepared by Italian experts and will cost Rs.9 crores in the first stage and Rs.12 crores in the second stage. The factory is expected to go into production in 1955.

Aeromagnetic Geological Surveys.—The U.S. Geological Survey in a recent release describes a method of effecting a rapid geological survey carried out in the Katahdin area of Maine for pyrite deposits in the search for pyrite and other iron sulphides. The survey extended over 1,000 square miles in the Sebec, Sebec Lake, Cooper Mountain and Reach River Quadrangles in the State of Maine. The measurements were made with an airborne magnetometer installed in a D.C.-3 aircraft with the detecting element flown 75 ft. under the plane. The magnetic profiles recorded were examined and the location of the anomalous areas transferred to aerial photographs by means of check points spotted by the observer during flight. This type of compilation was employed in order to make the data quickly available, and because there were no maps of the area. Later, suitable base maps are prepared enabling more precise and detailed presentation of the data possible.

Higher European Steel Production—But U.K. Output Unchanged.—Britain, with a practically unchanged steel production of 8,284,000 tons, was the only European country not to increase output of steel in the first six months of 1951, as compared with 1950, states the United Nations Economic Commission for Europe.

European steel production as a whole increased by some 10 per cent over last year. The upward trend was particularly noticeable in Belgium, Denmark, Luxembourg, the Saar, and Italy, where production rates for the first six months of 1951 ran as follows (in tons): Belgium, 2,514,000 (+ 53 per cent), the Saar, 1,264,000 (+ 33 per cent), Italy, 1,458,000 (+ 23 per cent), Luxembourg, 1,509,000 (+ 23 per cent), and Denmark, 77,000 (+ 25 per cent).

Of the smaller producers, Finland's output increased 34 per cent to 69,000 tons and that of Trieste by 51 per cent to 29,000 tons. Western Germany, the second biggest producer after Britain, had an output of 6,442,000 tons, i.e., an increase of six per cent.

The only eastern European country for which estimates are available is Poland, which registered an increase of 8 per cent to 1,357,000 tons.

S. Rhodesia's Asbestos Overtaking Gold in Value.—Asbestos is rapidly overtaking gold as one of Southern Rhodesia's most profitable minerals. Estimates of the value of the current year's output have been put as high as £5,000,000, or five times more than the value of a decade ago, and only £1,000,000 below the current estimated value for the Colony's gold output. The main reason for the increase, according to a report prepared in the Office of the High Commissioner of Southern Rhodesia, has been the big demand for short fibre asbestos which is now being used in products essential to the building industry. Previously, there had been little demand for short fibre asbestos, the manufacturers preferring the long fibre variety. In consequence, new deposits of short fibre asbestos which previously would not have been economical to work are being exploited with increasing success.

The introduction of a new mill at the Gath Mine and the £30,000 installation shortly to be completed in the Filabusi area has provided a big impetus for the current year's production. Most of Southern Rhodesia's output is exported to Britain and to the Union of South Africa, with a small proportion going to the U.S.

Stalingrad Hydro-Electric Project.—On the anniversary of the decree on the construction of the Stalingrad hydro-electric project, Mr. Fedor Loginov, head of the construction project, stated in an interview, reported in *Soviet News*, that the Stalingrad hydro-electric construction is a whole system of gigantic hydro-technical installations unequalled in the world either in size or importance. The capacity of the station will be at least 1,700,000 kW and it will produce some 10,000 million kWh in a year of average flow of water.

The builders of the Stalingrad hydro-electric project will have to erect a great dam which will contain the waters of the Volga and the Akhtuba. The level of the Volga waters will rise 26 metres (85 ft.). A large artificial reservoir will be formed, the width of which will, in some places, approach 30 kilometres. The dam will carry a railway line, a road and pavements for pedestrians. A lock will permit the passage of the Volga ships and rafts. The Stalingrad self-flowing canal will have its source at the dam on the left bank of the Volga. Its length will be over 600 kilometres and it will flow over the expanses of the trans-Volga steppes, connecting the Volga with the River Ural, and will supply water to 6,000,000 hectares of semi-desert land.

This hydro-electric project is scheduled to go into operation in six years; requiring the excavation of more than 400,000,000 cu. metres of earth.

Work at this great undertaking is stated to be in full swing; the first sections of the rail and motor roads have been built and many auxiliary enterprises have been put into operation.

BOULDER PERSEVERANCE

The Twenty-Seventh Annual General Meeting of Boulder Perseverance Ltd. was held on September 26 at Winchester House, Old Broad Street, London, E.C.

Dr. K. B. Edwards, B.Sc., Ph.D. (London), F.R.I.C., chairman and managing director, presided.

The following is an extract from the chairman's statement to the stockholders which was circulated with the report and accounts for the year ended March 31, 1951:

In considering the figures in the accounts and reports, allowance must be made for the return to a normal yearly period when comparing these with the immediately previous report, which was for 15 months.

During the year ended March 31, 1951, inflation in Australia proceeded by leaps and bounds. The basic wage for the five-shift week at the end of the year amounted to £A.11 0s. 5d. as against £A.9 4s. 7d. at the end of the previous year. Labour has been extremely scarce and losses in staff have been serious, owing to the continued drift towards coastal towns and more profitable industries. Most of the underground work is done on contract, as it is termed, which is in effect piece-work, and notwithstanding the provision of the most up-to-date tools and very largely increased rates, there is still dissatisfaction, as the contractors consider that their rates should automatically increase with the basic increases granted.

The price of gold, namely, that at which the Commonwealth Bank acquires it compulsorily, has remained fixed at £15 9s. 10d. Australian currency. Opportunity arose during the year for discussing the problems affecting the gold-mining industry with the Premier of Western Australia, who, while sympathetic, was unable to promise much assistance, except that the example of the Union of South Africa in allowing a percentage of gold to be sold at an enhanced price was deemed worthy of further consideration.

BOULDER PERSEVERANCE MINE RESULTS

Notwithstanding interference from labour disputes which affected the early part of the year's operations, tonnage treated during the year was 114,810 long tons of an average value of 4.90 dwts. being 0.09 dwts. lower than for the previous fifteen months. Development was again curtailed through lack of labour and the ore reserves have therefore decreased to 387,400 long tons at the same value of 4.8 dwts., a decrease of 62,900 tons from the figure at March 31, 1950. Re-treatment of tailings contributed only £1,715 to the profit, and dividends from Kalgoorlie Enterprise Mines £5,720. The total profit amounts to £52,189. In view of the enormous financial drain caused by increased cost of stores and inflation generally, a further transfer to reserve of £10,000 must be made, bringing the reserve up to £50,000.

KALGOORLIE ENTERPRISE MINES

This company produced for treatment for the same period 46,044 long tons of an average grade of 6.67 dwts. Shortage of labour affects this mine more acutely than Perseverance Mine, largely owing to the necessity for cut-and-fill stoping. The conversion of the winding engine to a higher power has at last been completed, and it is hoped that the tonnage of ore hoisted and treated can be increased. Ore reserves stand at 224,800 long tons of 6.3 dwts., a reduction of 43,300 tons of the same value.

TREATMENT COMPANY

Kalgurli Ore Treatment Company operated at an extremely high rate of efficiency, the extraction based on mint returns amounting to 94.62 per cent of the computed theoretical gold entering the plant.

The conversion of the Kalgoorlie Electric Power Corporation's plant to coal has not yet been completed. Wood fuel continues to rise in cost, and the increase of rail freights will make the transfer to coal not as economical as was hoped.

FUTURE RESULTS

With a fixed price for our product and the inflationary movement still continuing in Australia, Great Britain and the United States, it is impossible to make any forecasts. The penal legislation with regard to taxation is shown clearly in the accounts, and neither in Australia nor in Great Britain is any consideration given to the real capital invested in the company's operations, but only the issued capital.

In view of the deliberately distorted statements commonly made as to the right of the workers to share in profits, this company out of a gross income of £340,267 pays out in Australia, wages, salaries and payments on behalf of employees £154,727 (45.47 per cent.), while stockholders receive net £12,084 (3.55 per cent.).

The report and accounts were adopted.

KENT (F.M.S.) TIN DREDGING, LTD.

MR. STANLEY WICKETT'S REVIEW

The Twenty-Fourth Ordinary General Meeting of Kent (F.M.S.) Tin Dredging, Limited, was held on the 19th September, 1951 at the Registered Office, Redruth.

Mr. Stanley Wickett (Chairman) presided.

The Report and Accounts for the year ended 31st December, 1950 having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the Reports and Accounts, which was as follows:

The Accounts for the year ended 31st December, 1950, show a gross profit of £143,354 as compared with £51,012 for the previous year.

Royalty of £42,198 was paid to the Malayan Government before arriving at the above figure and from the gross profit United Kingdom taxation required the provision of £83,714, together making a total contribution by the Company to Government funds of £125,912.

After providing £1,531 for depreciation and for the transfer of £20,000 to General Reserve, Shareholders received dividends of 57½ per cent, amounting to £32,878 nett. The Directors propose that the balance of £23,168 standing to the credit of the Profit and Loss Account be carried forward to the current year.

During February, 1951 the Company's claim for War Damage was assessed by the Commissioners at £30,651, of which £41 had been received and off-set against the Government Advance. Because of the limited funds available to the Malayan Government as compensation for War Damage legitimate claims by the Mining Industry were drastically scaled down and the assessment thus represents only a part of the Company's total losses. After consultation with our General Managers the assessment was accepted, appeal being deemed useless under the rules. From the Balance Sheet it will be seen that the Advance received from the Government, less the small sum referred to above, stands at £43,849 and that Expenditure incurred on Rehabilitation account was £36,632. The first interim payment of 60 per cent, amounting to £18,350, which has since been received and off-set against the Government Advance, will be shown in the next Accounts.

GOOD DREDGING RESULTS

The Report of our General Managers, Messrs. Osborne and Chappel, contains comparative statistics and a summary of work at the Mine. It will be noted that during the year under review the dredge continued work at the northern end of the property where conditions were extremely good and the tin content above the average of the property. This increase, together with the higher grade of ground treated, resulted in the very satisfactory output of 514½ tons of tin ore as compared with 381½ tons produced in 1949.

Excellent progress was made with construction of the new river channel and with the weir which was completed.

During the current year Shareholders have been advised by postcards of the outputs of tin-ore for the first six months of the year as follows:—

January-March, 1951	...	2,205 piculs = 131¼ tons
April-June, 1951	...	2,175 piculs = 129½ tons

These outputs maintain the average of last year and the General Managers regard the prospects as being favourable provided adequate coal supplies can be maintained. Oil burning equipment is being accumulated with a view to the provision of an alternative source of fuel.

The market price of metallic tin, over which producers have no control despite misinformed American statements to the contrary, after rising to a maximum of £1,615 per ton in February, 1951, was forced down to £800 per ton in August, 1951, a figure much below the comparable price of other base metals. Such variations are not in the interests of either producers or consumers who both require reasonable stability, and an industry receiving payment for its commodity which will ensure the production of long term world requirements.

Malaya continues to be organized on a war footing against the Communist guerilla menace which overshadows all other problems. On behalf of all Shareholders I again particularly thank our General Managers, the Staff at the Mine, and the Labour Force for the services they are most efficiently rendering to the Company under the difficult conditions prevailing.

CHAIRMAN'S ADDITIONAL REMARKS

The Chairman, addressing the meeting, said:

Since I wrote my address doubtless all Shareholders have been shocked by the Government's proposed Scheme to limit dividends for the next three years to the average payment for the past two years.

The idea has been very badly conceived and is a mass of unfair treatment. We are Members of the London Malayan Chamber of Mines who, in common with the Rubber Com-

panies, have lodged a very strongly worded protest to the Chancellor of the Exchequer.

Here we have another glaring instance of class hatred. Labour is having increases on every hand whereas the poor Shareholder is singled out for slaughter. The suggested application of the Scheme bristles with inequalities and hits hardest those Companies who have pursued a policy of financial prudence. We should all make our voices heard to impress on the Chancellor our disgust. Malayan Companies had to forgo any dividends for five or six years during the war and if the Act should come into force we have solid grounds for asking for special treatment.

Should the Act be passed any dividends to be paid by this Company would seem to be limited to 38¾ per cent for the next three years.

With all Shareholders I hope the Chancellor will see the error of his ways and withdraw the Scheme, which at present has not become law.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

TEKKA, LTD.

MR. STANLEY WICKETT'S REVIEW

The Thirty-First Ordinary General Meeting of Tekka, Ltd., was held on the 19th September, 1951 at the Registered office, Redruth. **Mr. Stanley Wickett** (Chairman) presided.

The Report and Accounts for the year ended 31st March, 1951, having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the Report and Accounts, which was as follows:

The Accounts for the year ended 31st March, 1951, show a profit of £34,292 as compared with £20,888 for the previous financial year. Provisions for United Kingdom taxation require £21,418, the sum of £10,683 having been previously paid to the Malayan Government in Royalty on tin-ore, making a total contribution to Government funds of £32,101.

Three interim dividends—one of threepence per share and two of sixpence each per share—have been paid to Shareholders, absorbing a nett amount of £12,102 and, following necessary minor adjustments, the balance to be carried forward has been increased from £27,578 to £28,740.

Provisional Assessment of the War Damage Claims of some mining companies has been agreed and it was hoped that by this time the Assessment of this Company would also have been completed; it is understood, however, that further delay became unavoidable in consequence of the sudden death of the Government Official in charge of this work.

The advance received from the Malayan Government stands in the accounts at £19,219, the sum of £41 having been credited as being repaid. Expenditure carried forward in Suspense on Rehabilitation Account amounted to £27,495.

From Messrs. Osborne and Chappel's Report, which is appended, it will be noted that due to working conditions at the paddock the yardage treated during the year under review was restricted and with the general rise in the cost of wages and materials there was an increase in the cost of production. This was partly offset by slightly higher grade ground, but the chief factor in providing the increase in profit was the higher average price received for tin ore. During the current financial year the General Managers anticipate that the necessary treatment of lower grade ground will temporarily result in a somewhat smaller output; in the first four months 28¼ tons of tin ore were produced.

I am pleased to be able to advise Shareholders that recent boring operations carried out at the property indicate that further profitable life of some nine to ten years may be expected from low grade ground at the north of the property, subject, of course, to a fair market price for tin when the ground is worked.

The maintenance of the present scale of Malayan production in the future will be largely dependent on the working of lower grade areas in all sections of the Industry. A fair price, commensurate with that of other metals, is therefore just as important to consumers in order to maintain their supplies as it is to producers and the Malayan Government.

For over three years the Communist-bandit menace has overshadowed all other problems. One of the many measures now being taken to isolate the bandits and restore confidence in law and order is the re-housing by the Company of part of the mine labour force and resettlement of squatters by the Government in protected areas. It is officially stated that spectacular results are not to be expected, but that steady successful progress is being achieved. Meanwhile our General Managers, the Resident Manager and the Labour Force at the mine continue to work under conditions of hazard and strain—again I sincerely thank them on behalf of all Shareholders.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

LAHAT MINES

The Forty-Fourth Annual General Meeting of Lahat Mines, Ltd., was held on September 25 in London.

Mr. E. V. Pearce, Chairman of the Company, presided.

The following is an extract from the statement of the Chairman, which was circulated with the report and accounts:

The working profit for the year to March 31, 1951, was £50,060. Dividends for the year totalling 4s. 6d. per share have been paid, and £2,757 is carried forward.

During the year work was mainly concentrated on the Temple area and it was from this ground that the bulk of the output was obtained.

Certain lots adjoining the Temple area were purchased during the year, as a result of which it will be possible to extend operations along the lines of the limestone-granite contact.

The development of these areas, which is tantamount to opening out a new mine, will take time, and, as mentioned by our general managers, reduced outputs must be expected until this work has been completed.

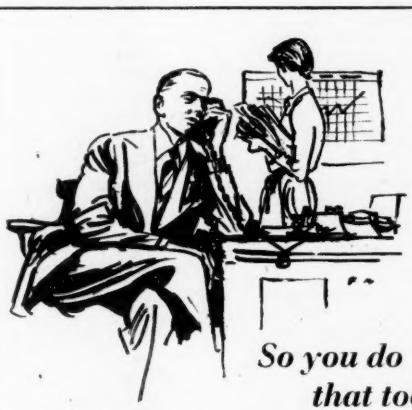
The information at our disposal leads us to expect that once this work is completed, satisfactory outputs should be obtained.

I am not going to attempt any prophecy regarding the future price of tin but I can say that, taking into account the enormous rise which has taken place in wages, and in the cost of all materials, many of the marginal mines, particularly the Chinese-owned mines, cannot work profitably at to-day's price.

Shareholders generally will be aware of the announcement made by the Chancellor of the Exchequer on July 26, to the effect that "it is the intention of the Government to introduce, when Parliament re-assembles in the autumn, a Bill providing for the control of dividends during a period of three years."

If the Chancellor's action was intended as a means of arresting further wage claims, it is doomed to failure, as is proven by the fact that at the annual conference of the Shipbuilding and Engineering Union held at Swansea on August 15, it was unanimously decided to support a demand for an increase of £1 per week for 2,500,000 ship-building and engineering workers, the estimated cost of which would be £125,000,000 a year.

The report and accounts were adopted.



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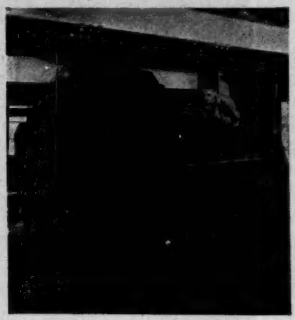

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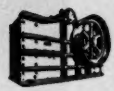

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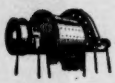

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